



Five-Year Review Report

Final Second Five-Year Review Report

for

Sharon Steel Superfund Site CERCLIS ID: UTD980951388

**Midvale City
Salt Lake County, Utah**

September, 2004

PREPARED BY:

**Utah Department of Environmental Quality
Salt Lake City, Utah**

Approved by:

Date:

Max H. Dodson
Assistant Regional Administrator
U. S. Environmental Protection Agency, Region 8

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List of Acronyms

ACL	alternate concentration limit
ARARs	Applicable or Relevant and Appropriate Requirements
BRA	baseline risk assessment
BSHW	Utah Bureau of Solid and Hazardous Waste
CA	Cooperative Agreement
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
COC	contaminants of concern
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FCOR	Final Close Out Report
FS	Feasibility Study
LAG	Interagency Agreement
IC	Institutional Control
ICPP	Institutional Control Process Plan
JB	Jordan Bluffs, Inc.
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MRRC	Mining Remedial Recovery Company
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NE	not established
NPL	National Priorities List
O&M	Operations & Maintenance
OM&M	Operations, Maintenance & Monitoring
OU1	Operable Unit 1
OU2	Operable Unit 2
PCOR	Preliminary Close Out Report
ppm	Parts per million
RAO	Remedial Action Objective
RD/RA	Remedial Design/ Remedial Action
RI/FS	Remedial Investigation/ Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
Site	Sharon Steel Superfund Site
SMP	Site Management Plan (for Redevelopment of OU1)
SS	Sharon Steel
TAG	Technical Assistance Grant
UAC	Utah Annotated Code
UDEQ	Utah Department of Environmental Quality
UDOH	Utah Department of Health
USBR	United States Department of Interior, Bureau of Reclamation
USSRMC	United States Smelting, Refining, and Mining Company
VOCs	volatile organic compounds
mg/kg	milligram per kilogram
µg/L	microgram per liter
µg/dL	microgram per deciliter
As	Arsenic
Pb	Lead
Cd	Cadmium

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Executive Summary

The Sharon Steel Superfund Site is comprised of two operable units and two remedies. The objective of the first remedy as described by the OU2 ROD was to reduce/ eliminate the exposure of the residents of Midvale City. Unacceptably high concentrations of lead and arsenic discovered in soils was removed from commercial and residential areas and replaced with two feet of clean soil. Nearly 600 commercial and residential properties were remediated over 8 years to action levels of 500 parts per million (ppm) lead and 70 ppm arsenic. Because contamination was left in place beneath permanent structures, five-year reviews were deemed necessary. The second remedy as described by the OU1 ROD included capping of the site with groundwater monitoring and containment. The consolidation of 10,000,000 cubic yards of tailings and contaminated soil and the subsequent capping of the OU1 site took place from 1995 to the end of 1998.

Both operable units were declared construction complete in January of 1999. Operation and maintenance of the OU1 site, due to the tailings left onsite, began in mid 2000 and is ongoing today. OU2 currently has no O&M, although pavement and structure-covered areas on OU2 properties were excluded from the remedy and contain contaminated soils.

The Utah Department of Environmental Quality conducted this five-year review for the U.S. Environmental Protection Agency, Region 8. This is the *second* five-year review for the Sharon Steel Superfund Site. The *first* five-year review was a Type Ia review. The conclusion and recommendation of the Ia review stated that ongoing remediation of the remaining remedies of the OU1 and OU2 RODs, as amended by the ESDs, should be continued. The report issued a Statement of Protectiveness certifying that the remedies, when fully implemented, would remain protection of human health and the environment.

The assessment of this five-year review is that both remedies for OU1 and OU2 are functioning as intended by the RODs and subsequent ESDs. The OU1 and OU2 remedies were constructed in accordance with the requirements of the RODs and ESDs. Currently the site is functioning as intended by the decision documents and remains protective of human health and the environment.

The OU1 site was purchased by a new owner, Jordan Bluffs, Inc., in January of 2004. The owner plans to develop the OU1 site into mixed uses in the next seven years. Great changes will likely occur on the OU1 site between this review and the *third* Five-Year Review due five years from now in 2009. The Sharon Steel Superfund Site is expected to be deleted soon from the EPA's Superfund National Priorities List.

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Five-Year Review Summary Form

SITE IDENTIFICATION

Site name (from WasteLAN): Sharon Steel Superfund Site

EPA ID (from WasteLAN): UTD980951388

Region: 8

State: UT

City/County: Midvale, Salt Lake County

SITE STATUS

NPL status: Final Deleted Other (specify) _____

Remediation status (choose all that apply): Under Construction Operating Complete

Multiple OUs?* YES NO

Construction completion date: OU1& OU2: Jan. 6, 1999

Has site been put into reuse? YES NO (Beginning Stages of Redevelopment)

REVIEW STATUS

Lead agency: EPA State Tribe Other Federal Agency _____

Author name: Elizabeth Yeomans

Author title: Remedial Project Manager

Author affiliation: Utah Department of Environmental Quality (UDEQ)

Review period: February 27, 1999 to August 31, 2004

Date(s) of site inspection: 11-25-03, 02-23-04, 04-28-04, 05-21-04, 06-21-04, 07-07-04

Type of review:

Post-SARA

Pre-SARA

NPL-Removal only

Non-NPL Remedial Action Site

NPL State/Tribe-lead

Regional Discretion

Review number: 1 (first) 2 (second) 3 (third) Other (specify) _____

Triggering action:

Actual RA Onsite Construction at OU #1

Actual RA Start at OU# _____

Construction Completion

Previous Five-Year Review Report

Other (specify) _____

Triggering action date (from WasteLAN): February 26, 1999

Due date (five years after triggering action date): September 1, 2004

* ["OU" refers to operable unit.]

** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, cont'd.

Issues:

The issues identified during this review include:

1. The **Jordan Valley Water Conservancy District (JVWCD)** will be putting in 5 additional wells (6 total) to the west and across the Jordan River from the Sharon Steel Site. Their plan is to pump the shallow Upper Sand & Gravel Aquifer as a drinking water source. Their modeling shows the pumping should not affect movement of the SS contaminant plume, but this bears watching.
2. **Groundwater monitoring** over the last seven years has consistently shown one well (MW-7A) to be over its action level of 190 ppb As. While this was to have triggered pump and treatment technology for the well, EPA and UDEQ evaluated the well's history and concluded that its location is responsible for the exceedance.
3. **OU2 contamination** remains in place under hard surfaces because the Remedial Action did not remove it. However, the 1998 ESD does not require that residents take protective measures if the hard surface covers were removed.
4. **Wetland function and structure.** The wetland gates are not currently being used and have become overgrown with vegetation and sediment in the last six years. However, the wetland system is functioning as intended.
5. **Institutional Controls.** (a) Grants of access on OU2 properties dating from 1995 were discovered during this review. The grants allowed for agency access to conduct sampling and remedial actions. (b) The 1990 Partial Consent Decree is undergoing partial termination this fall pursuant to a "Stipulation and Joint Motion for Modification and Termination of Partial Consent Decree". There are provisions in the Partial Consent Decree under which Institutional Controls will survive termination. (c) An Institutional Control Process Plan (ICPP) for Sharon Steel OU1 was adopted on May 4, 2004, by Midvale City and agreed to by EPA, UDEQ, and Jordan Bluffs, Inc. The ICPP documents the requirements and procedures for institutional controls for the capped portion of OU1 and areas where monitoring wells are present.
6. **Redevelopment of OU1** is set to occur, following geotechnical studies by the property owner and the findings of what the cap can support while maintaining the remedy's integrity. The property owner has also developed a Site Modification Plan for Redevelopment (SMP) to ensure that redevelopment activities are protective of the remedy. An ESD which addresses redevelopment was signed by EPA in July of 2004, and explains the significant differences between the remedy selected in the OU1 ROD and the remedy subsequent to redevelopment of OU1.
7. **Remedy Maintenance and Protectiveness Plan.** An Operation, Maintenance, and Monitoring Manual (OM&M Manual) for SS OU1 was written and implemented during the last five-year period. With the advent of a new property owner and redevelopment occurring, modifications will be needed to the Manual to define changes in tasks and responsibilities. UDEQ will continue Quarterly Site Inspections during and after redevelopment.
8. Several changes to **chemical-specific ARARs** (Applicable or Relevant and Appropriate Requirements) have occurred that could potentially affect the remedy for OU1.

Recommendations and Follow-up Actions:

1. **JVWCD** has signaled its intention to UDEQ to annually monitor the influent from its wells to determine if pumping is affecting the Sharon Steel contaminant groundwater plume. They will submit the analytical results to UDEQ. Well production is scheduled for late 2007.

Five-Year Review Summary Form, cont'd.

Recommendations and Follow-up Actions (continued):

2. **Groundwater monitoring** will continue to be performed and conditions at well MW-7A evaluated each year, with conditions reported in the annual groundwater report.
3. **OU2 remaining contamination.** EPA's 1998 ESD does not require that OU2 residents take protective measures from contaminated soils if the hard surface areas on their properties are removed. Midvale City officials agreed in 1998 to monitor the one property owner's residence where lead contamination beneath hard surfaces exceeds 4,000 ppm.
4. **Wetland function and structure.** The new property owner has agreed to maintain the wetlands environment, which is presently being sustained by a static system with the gates closed and with the groundwater matching the elevation of the Jordan River.
5. **Institutional Controls.** (a) On 07-14-04 the Salt Lake County Recorder's office filed UDEQ's "Notice of Release of Access Agreements" to remove the grants of access dating back to 04-18-95 which gave access to the Agencies onto OU2 properties. (b) The termination of the 1990 Partial Consent Decree contains a Survival Clause under which Institutional Controls will survive termination. (c) The ICPP can be evaluated at the next Five-Year Review to see how it is working.
6. **Redevelopment of OU1.** The property owner is conducting geotechnical studies of what OU1 can support, and the City's engineers will approve final designs for redevelopment. The property owner developed a "Site Modification Plan for Redevelopment" (SMP) which identifies the requirements that will ensure that no material modifications to the ROD and ESD result from redevelopment, and that the integrity and effectiveness of the remedy will be maintained despite redevelopment. The SMP can be evaluated at the next Five-Year Review to see how it is working.
7. **Remedy Maintenance and Protectiveness Plan.** UDEQ will modify the OU1 OM&M Manual in the next year and as needed to reflect the changing roles and responsibilities for operation, maintenance and monitoring of the OU1 site during and after redevelopment. The State will continue Quarterly Site Inspections during and after redevelopment and associated quarterly reports and documentation will be submitted to EPA.
8. Evaluation of **chemical-specific ARAR's** will be performed by EPA and UDEQ (see Table 8 in Section 9).

Protectiveness Statement(s):

The remedy as implemented at OU1 and OU2 of the Sharon Steel Superfund Site, is functioning as intended by the decision documents and remains protective. Because the undeveloped OU1 portion of the site currently has no receptors exposed to the contamination, and the cap is currently functioning as designed, the remedy is currently protective. The property owner and City of Midvale are working to determine which structures can be built upon the cap with no negative impact to the OU1 remedy. The property owner is also conducting geotechnical studies of the site, the results of which will be issued shortly. In order for the remedy to be protective in the long-term, the remedy as well as the effects of redevelopment will continue to be monitored and the follow-up actions in Table 8 will be taken.

Other Comments: None.

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Section 1

Introduction

The Utah Department of Environmental Quality (UDEQ) has conducted a five-year review of the remedial actions implemented at the Sharon Steel Superfund Site, CERCLIS ID: UTD980951388, in Midvale City, Salt Lake County, Utah. This review was conducted from September 2003 through August 2004. This report documents the results of the review.

This is the second five-year review for the Sharon Steel Superfund Site. The first five-year review was a Type Ia review performed by the U.S. EPA Region VIII. The Type Ia is a modified version of the Type I review, appropriate for a site not deemed construction complete. The trigger action for this second review is five years after the first five-year review, which was dated February 26, 1999. The five-year review is required since hazardous substances, pollutants, or contaminants remain at OU1 and OU2 above levels that allow for unrestricted use and unlimited exposure. This five-year review is being conducted by UDEQ per the guidelines in the *EPA Comprehensive Five-Year Review Guidance*, June 2001.

The remedial actions stipulated in the Record of Decision (ROD) for Operable Unit 1 (OU1) and in the ROD for OU2, are complete. The purpose of the five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of the review are documented in the five-year review report. In addition, the five-year review report identifies deficiencies found during the review, if any, and identifies recommendations to address them.

This five-year review is required by statute. The EPA must implement five-year reviews consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA §121(c), as amended, states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented.

The NCP, §300.430(f)(4)(ii) of the Code of Federal Regulations (CFR), states:

If a remedial action is selected that results in hazardous substances, pollutants or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

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Section 2

Site Chronology

Table 1 summarizes the important events and relevant dates in the site's chronology.

Table 1 **Chronology of Site Events**

<i>Date</i>	<i>Event</i>
1906 - 1971	Ore processing and milling conducted at the Site.
1971	The USSMRC mill closes on Sharon Steel.
1979	The Sharon Steel Company agrees to purchase the property from UV Industries. Deed signed 11-81.
1982	Salt Lake County Health Dept. and the Utah Dept. of Health (UDOH) are alerted to local residents use of mining tailings for sand box, garden and yard fill. Environmental investigations at the site begun.
March 1983	UDOH and EPA conduct a preliminary assessment of the Site.
April 1984	State of Utah Bureau of Solid and Hazardous Waste (BSHW) conducts a site inspection of the Site.
June 1985	EPA conducts a field investigation at the Site.
August 1985	Ecology and Environment, a technical assistance team contractor, conducts an investigation of surface water and sediment in the Jordan River.
August 1985	EPA notified Potentially Responsible Parties they may be PRPs.
June 1986	The EPA proposed listing the Site on the Superfund's National Priorities List (NPL).
1987	A Settlement Account to be funded by PRPs is established by EPA for the SS and Midvale Slag sites.
June 1988	A State Administrative Order directs the PRPs to implement dust suppression by spraying the tailings with a polymer coating.
July 21, 1988	A Preliminary Endangerment Assessment (PEA) is performed by the Agency for Toxic Substances & Disease Registry (ATSDR). In July 1990, EPA did a revision of this PEA.
Fall 1989	EPA decides to divide the site into two Operable Units, OU1 and OU2.
1989	EPA conducts a blood lead testing program on 128 children in Midvale.
1990	A Removal Action occurs to fence the site and prohibit access.
September 24, 1990	The Record of Decision (ROD) is issued for SS OU2. The selected remedy addresses contaminated soils in the residential and commercial areas east and northeast of the mill site in Midvale City. The soils are contaminated with lead, arsenic, and cadmium. Up to 600 properties are eventually cleaned.

Table 1 **Chronology of Site Events**

<i>Date</i>	<i>Event</i>
November 13, 1990	Trial decisions are reached with three PRP's in Civil Action suits. They include Sharon Steel Corp., ARCO, and UV Industries, Inc. The Settlement Account is to be funded with a total of \$64 million.
January 1991	A removal action took place for the removal and disposal of chemicals on SS OU1.
1991 – 1998	The SS OU2 remedial work was done in a five phased approach over a period of 8 years. The State was the lead agency, with the USBR acting as the oversight engineer to UDEQ.
February 14, 1991	The Sharon Steel Superfund Site was finally listed on the NPL.
July 1992	Removal Action at SS OU1. Asbestos inventory followed by demolition of mill facilities and salvage.
December 1993	The ROD is issued for SS OU1. The selected remedy includes capping of the site with groundwater monitoring and containment. EPA provided a contingency process to allow the State to enhance the remedy by excavation, transportation, and offsite containment of the contaminated tailings and soils. (Later proved to be cost-prohibitive.) The State did not concur on the remedy nor did it sign the ROD.
1994	Remedial Design (RD) work performed on SS OU1 while Remedial Action (RA) work occurred on OU2.
June 1994	An Explanation of Significant Differences (ESD) is issued for SS OU2. This ESD states that garden soils outside the 500 ppm lead/ 70 ppm arsenic boundary will not be remediated to below 200 ppm lead and will not be subject to institutional controls.
June 1995	Mobilization and preparatory work begun on the RA for capping OU1.
1996	Capping of the tailings pile occurred from June 96 to October 96.
Late 1996	Groundwater monitoring wells installed and quarterly monitoring began in May of 1997.
Fall 1998	EPA conducts follow-up blood lead testing on 341 Midvale residents.
December 1998	ESD issued on SS OU2, citing EPA's decision to (1) limit the scope and cost of the RA by not remediating selected city properties and transportation right-of-ways (this cleanup responsibility being delegated to the city by EPA at the city's request), and (2) removing institutional controls associated with future residential construction.
January 6, 1999	Final site inspection conducted by EPA, UDEQ, and USBR for both RAs completed on Sharon Steel.
March 1999	USBR completes final Remedial Action reports for UDEQ on SS OU1 and OU2.
April 1999	USBR completes SS OU2 5-Year Review Data Collection Activities Report for EPA to address 2 concerns: (1) had cleaned OU2 properties been recontaminated during the OU1 cleanup?; and (2) had the Midvale City Contaminated Soil Regulations been effective? The results were "no" and "inconclusive".
May 2000	UDEQ contracts with USBR to write the OU1 OM&M Manual.
January 2001	The first Annual round of Groundwater Monitoring is performed at OU1 by UDEQ. Report sent 5-2-01.
June 19, 2001	Midvale City annexes southern remainder of OU1 site. Entire OU1 site is now in Midvale City.

Table 1 **Chronology of Site Events**

<i>Date</i>	<i>Event</i>
October 18, 2001	USBR performs first Quarterly Site Inspection for UDEQ. UDEQ sent report to EPA on 5-1-02.
October 19, 2001	USBR completes final OM&M Manual for UDEQ. Final copies sent to distribution list on 11-28-01.
February 27, 2002	Quarterly Site Inspection performed by USBR. Report sent to EPA by UDEQ on 5-1-02.
March 15, 2002	EPA sent letter to property owner MRRC on precautions to take when adding clean fill to OUI site.
May 30, 2002	Quarterly Site Inspection performed by UDEQ. Report sent to EPA on 7-22-02.
August 2002	Annual Groundwater Monitoring for 2002 performed. Report sent to EPA on 11-20-02.
August 29, 2002	Quarterly Site Inspection performed by UDEQ. Report sent to EPA on 10-31-02.
November 26, 2002	Quarterly Site Inspection performed by UDEQ. Report sent to EPA on 12-2-02.
February 27, 2003	Quarterly Site Inspection performed by UDEQ. Report sent to EPA on 3-5-03.
May 28, 2003	Quarterly Site Inspection performed by UDEQ. Report sent to EPA on 6-12-03.
August 27, 2003	Quarterly Site Inspection performed by UDEQ. Report sent to EPA on 9-8-03.
September 2003	Annual and Five-Year Review Groundwater Monitoring for 2003 performed. Annual report sent to EPA on 1-26-04.
November 26, 2003	Quarterly Site Inspection performed by UDEQ. Report sent to EPA on 12-9-03.
January 26, 2004	SS OUI site purchased by Jordan Bluffs, Inc. from Sharon Steel successor MRRC.
February 23, 2004	Quarterly Site Inspection performed by UDEQ. Report sent to EPA on 2-25-04.
May 4, 2004	Midvale City adopts the Sharon Steel OUI Institutional Control Process Plan.
May 21, 2004	Quarterly Site Inspection performed by UDEQ. Report sent to EPA on 5-26-04.
July 2, 2004	EPA signed the July 2004 SS OUI Explanation of Significant Differences on redevelopment.
July 9, 2004	EPA and UDEQ accept the Final SS OUI Site Modification Plan for Redevelopment prepared by Jordan Bluffs, Inc. and their contractor ERM, dated 02-12-04.
July 14, 2004	Salt Lake County Recorder's Office records DERR's "Notice of Release of Access Agreements" for SS OU2 dating from April 1995.

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Section 3 Background

3.1 Location and Setting

The site is located 12 miles south of Salt Lake City, Utah, and is completely within the city limits of Midvale (see Figure 1 in Attachment 1). Midvale's population in 2002 was an estimated 27,318 residents. The site encompasses approximately 460 acres and is divided into two operable units, OU1 and OU2. OU1 is approximately 260 acres and is considered to be the primary source of contamination. OU1 comprises the currently undeveloped portion of the site, and includes the former area of the mill facilities, processing plants, and outbuildings, in addition to the ten million cubic yard capped waste tailings pile. The western border of OU1 was extended to include a smaller 2.3-acre site on the western side of the Jordan River that once contained a smaller tailings pile. OU2 comprises the eastern 200 acres of the site, consisting of residential and commercial properties in Midvale City. OU2 is bounded on the north by 400 North Street, on the South by 400 South Street, on the east by 400 East Street and on the west by Sharon Steel OU1. The OU1 site is bounded approximately by the following: 7800 South Street on the north, the Jordan River on the west, 8600 South Street on the south, 700 West Street on the east, and Holden Street on the northeast.

The site is located in the Salt Lake Valley, a north-south oriented topographic feature bounded on the west by the Oquirrh Mountains and on the east by the Wasatch Range. Thrusting, faulting, folding, and igneous intrusions are responsible for the presence and form of these mountain ranges. These ranges are the source of the Quaternary alluvial sediments that overlie much of the valley floor.

The site has two main geographic features: the Jordan River floodplain and a terrace formed from the Lake Bonneville system. The tailings from the mill are located on the floodplain and early historical photographs show the Jordan River cut through the middle of the site. Gradual deposition of the tailings pushed the Jordan River to the west and altered its course. The former mill site and nearby residential areas are on the terrace. Jordan River floodplain soils, which underlie the tailings, consist of loams, clays, sands, and gravels. The top 30 feet of the native zone typically are organic, sticky clays and silts, becoming sandier downward. The clay is underlain by fine- to medium-grained sand, which coarsens downward and often grades into gravelly sands or sandy gravels.

The land south and west of Midvale is used primarily for commercial and agricultural activities; the land north and east of Midvale is mostly urban. The entire area is drained by the Jordan River, which provides cold water habitat for fish, but is primarily used for agricultural irrigation. Adjacent to the Jordan River are wetlands, which provide wildlife habitat to different species of birds and animals.

The subsurface beneath the Salt Lake Valley includes substantial groundwater resources. These consist of shallow unconfined, confined, and deep confined aquifers, which are used for domestic, agricultural, and industrial applications. The RI/FS studies found that the shallow Upper Sand & Gravel (US&G) Aquifer directly under the OU1 site had been contaminated from the tailings. The contaminant of concern for groundwater is arsenic, because of its ability to move through the tailings. There are also a number of public drinking water supply wells within a three-mile radius of the site, most of which use the deep aquifer to serve approximately 440,000 people. Monitoring of the US&G and deep principal aquifers is ongoing to assure contamination has not spread beyond the site or seeped downward.

3.2 Site History

Little information is available describing historical activities on OU1 prior to 1906. Before that time, it is believed that the land was used as pasture with the geographic landscape being favorable to mining activities in the last three decades of the 1800's. It is believed at least two early smelters were located on the Sharon Steel Site prior to 1900, the Sheridan Hill and the Galena smelters. The capacity of these smelters was small, and it is assumed that their wastes were overlain with subsequent tailings waste.

Shortly after the turn of the century in 1902, United States Mining Company started operation of their copper smelter south of and contiguous to the Bingham Consolidated Smelter located on the Midvale Slag property immediately north of Sharon Steel. In 1906, the United States Mining Company was acquired by United States Smelting, Refining and Mining Company (USSRMC). The Sharon Steel site comprised the milling and ore processing portion of USSRMC. Byproducts of ore processing, with high levels of arsenic and lead from the milling operations, were transported from the processing plant to a waste tailings pile west of the mill, as well as to a 2.3 acre site on the west side of the Jordan River. The milling facilities operated for a period of approximately 65 years until 1971. The large smelter facilities were located on Midvale Slag, and were shut down earlier in 1958. Sharon Steel Company signed an agreement to purchase the Sharon Steel site in 1979 from the successors to USSRMC and took ownership in November 1981.

The milling operations involved receiving lead, copper and zinc ores, and extracting the sulfide concentrates of these metals through various techniques including froth flotation. The Sharon Steel facility also operated as a custom mill, receiving ores from many places and clients and concentrating and extracting a variety of metals according to the client's specifications. The wastes from the milling operations were disposed of in unconsolidated tailings piles on-site. The mill site included several mill buildings and eventually approximately 10 million cubic yards of tailings in uncovered piles up to 50 feet deep in places. The 260 acres comprising OU1 were contaminated by the accumulation of these mining wastes. Wind transport of tailings caused the contamination of OU2 from OU1 due to the prevailing north and south winds in the valley. Additional transport mechanisms thought to account for contamination of OU2 soils include the following:

- Unsuspecting residents used the tailings for yard fill, sandboxes and gardens
- Surface water transport of tailings onto OU2 from the tailings piles on OU1
- Fallout of smelter fumes onto OU2 from smelter chimneys on the Midvale Slag OU2 site and/or the south chimney on OU1 of the former Sharon Steel Superfund Site
- Deliberate placement of tailings and possibly other ore processing waste onto OU2 to sand roads in the area during snow or ice events

A potential health problem was first identified at the site in June 1982 when the Utah Department of Health (UDOH) was notified that citizens were gathering windblown tailings along 7800 South Street and using them in sandboxes, gardens, and as yard fill. The UDOH analyzed a sample of the sand and found that it contained 4,000 ppm of lead. Further sampling in August of 1982 along 7800 South Street also found high concentrations of arsenic, cadmium, chromium, copper, lead, and zinc.

Investigations conducted by local, State, and Federal agencies from 1982 to 1990 determined that soils on the Sharon Steel property, as well as on nearby residential and commercial properties, had arsenic and lead concentrations at levels that posed unacceptable risks to residents. A Remedial Investigation (RI) was completed in June of 1988 and a Feasibility Study (FS) in July of 1989. An extensive groundwater

remedial investigation was also conducted in 1988-1990. The remedial investigations determined that tailings from the Site were blowing into the surrounding communities and citizens were also using them as yard fill. It was determined that a significant endangerment existed due to exposure to the tailings either from direct contact on site, wind deposition and/or use as yard fill. In addition, arsenic and lead contamination in residential and commercial soils presented a significant risk to human health. Several heavy metals were found in the shallow groundwater under the tailings, but arsenic was the primary metal of concern as it was the most mobile. The Site was proposed for the Superfund's National Priorities List (NPL) in 1984 and listed on the NPL on February 14, 1991.

Results from the studies demonstrated the tailings at the mill site averaged 5,470 ppm lead and 320 ppm arsenic. Background soil concentrations for this area are less than 100 ppm lead and less than 20 ppm arsenic. In the OU2 study area, the surface soils had lead (Pb) concentrations ranging from 33.8 ppm to 7,210 ppm, with an average of 839 ppm. Arsenic concentrations in the OU2 surface soils ranged from 3.5 ppm to 3,520 ppm with a mean of 101 ppm. Based on the studies performed and experience at similar sites, EPA and UDEQ designated arsenic, cadmium, and lead as the contaminants of concern (COCs) at Sharon Steel.

In 1989 EPA also conducted a blood lead screening program to determine how many children living in OU2 had been affected by the elevated lead levels in their yards. EPA funded the University of Cincinnati to conduct the sampling, and a Technical Advisory Committee (TAC) was established to provide technical expertise and help ensure that the study met the needs of the Midvale community. Results of the blood sampling of 128 children showed that 23 children had lead levels exceeding 10 µg/dL, the standard of safety set by the U.S. Centers for Disease Control. The average level among the children was 5 µg/dL, while the national average is 2.7 µg/dL.

Follow-up testing was conducted in the fall of 1998 to determine the usefulness of the technical remedy in reducing lead exposure. EPA actively recruited participants from households covered in the original study, but opened the program to all interested Midvale residents. Of the 341 residents who participated in the follow-up study, 286 were children, 29 were pregnant women, and 26 were nursing mothers. Results revealed only one child with blood lead exceeding 10 µg/dL. The average among the participants was 3 µg/dL. The conclusion is that the technical remedy was successful in reducing lead exposure.

In 1989, a Proposed Plan for the site was issued. As a result of extensive public comment on the plan, EPA decided to divide the site into two operable units, with OU1 encompassing the mill site, its tailings, and the contaminated groundwater underneath, and OU2 covering the residential, commercial and municipal soils contaminated by windblown tailings. According to EPA, the decision to divide the site into two OUs was based on the imminent threat presented by the residential soils and the need to further investigate groundwater beneath the mill site.

Emergency response actions were conducted at the site prior to any remedial actions in an effort to respond to the most immediate risks posed to the area residents' health. The site owner, under mandate from EPA and UDEQ, fenced the mill site, stabilized the banks of the Jordan River, and sprayed the tailings with a polymer to bind the contaminated dust particles and prevent further windblown contamination. EPA also demolished the old mill building facilities in 1992 and 1993 under an Emergency Response Removal Action.

Pursuant to a Partial Consent Decree entered by the United States District Court for the District of Utah in 1990, EPA settled with three Potentially Responsible Parties (ARCO, UV Industries and Sharon Steel) for approximately \$64 million. The money was designated to assist with remedial action activities for both the Sharon Steel and Midvale Slag Superfund Sites.

Section 3
Background

Throughout site investigation, remedy selections, and remedial actions, EPA served as the lead agency for the site. UDEQ, working under a cooperative agreement with EPA, served as the contracting agent for the technical remediations and provided oversight of all cleanup activities. Today UDEQ conducts O&M through a cooperative agreement with EPA from monies from the original Settlement Account.

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Section 4

Remedial Actions

4.1 Remedy Selection

4.1.1 Sharon Steel OU2 Remedy Selection

The OU2 remedy was selected and implemented before the OU1 remedy to address the most immediate threat to the public health, and therefore will be discussed first.

The OU2 ROD called for the following major components in the remedy:

- Contaminated soils and associated vegetation were to be removed down to the action level. The action level was 500 ppm lead (Pb) and 70 parts per million (ppm) arsenic (As). Existing soils being used for gardening would be remediated to the action level of 200 ppm Pb and 70 ppm As.
- Soils removed from the residential areas were to be temporarily transported to Sharon Steel OU1. The remedy selected for the mill site addressed the tailings at the mill site in addition to these soils from OU2.
- Clean soil replaced the excavated soils back to the original ground surface.
- Clean soils were to be graded to the original contour and revegetated.
- The residents were offered the opportunity to be temporarily relocated.
- Following outdoor cleanup, home interiors were tested and cleaned to remove household dust if the dust exceeded the action levels for lead and arsenic.
- Trees and shrubs were removed and replaced as necessary if soil removal affected their viability.
- The OU2 ROD called for contaminated soils covered by permanent structures, such as concrete, asphalt, and foundations, to be left in place. Institutional controls were to be implemented to provide special provisions for future construction when removing or replacing existing structures, and for initiation of new gardens.

The selected remedy was to remove the principal threat at OU2, which was the exposure of the residents to unacceptably high levels of lead, arsenic and cadmium in their soil (see Figure 4 in Attachment 1). The soil presented a hazard particularly to children who could ingest the soil directly, by eating food with dirty hands, inhaling dust from the soils, and by ingesting contaminants in vegetables grown in the contaminated soil.

The action levels, based on health-based calculations, were established for lead and arsenic at 500 ppm Pb and 70 ppm As. An action limit for cadmium was not calculated since it was discovered that the distribution of all three COCs had similar patterns, and cleaning up lead and arsenic to their action levels would accomplish the cleanup for cadmium as well. A separate action level for garden soils was established at 200 ppm lead and 70 ppm arsenic, because it was concluded that home grown vegetables

grown in contaminated soil can incorporate lead and thereby produce an additional exposure route. The ROD did not establish official action levels for commercial or municipal properties in OU2, although EPA informally set the action level for future excavation of unremediated properties at 2900 ppm Pb, according to the Environmental Law Institute's 1999 Research Report on Institutional Controls. The action levels that were developed for the COCs, based on the human health risk equivalent to a pre-specified cancer risk, hazard index, or distribution of blood-lead levels, is shown in Table 2 below.

Table 2 OU2 Cleanup Levels for Contaminants of Concern*

<i>Contaminant</i>	Cleanup Levels		
	<i>Clean Soil</i>	<i>Garden Soils</i>	<i>No GW contamination</i>
Arsenic	70 ppm	70 ppm	na
Lead	500 ppm	200 ppm	na

*From OU2 ROD, page 40.

Covered areas on OU2 properties were excluded from the OU2 remedy due to the high cost estimates associated with excavating beneath pavement and structures. Potential exposure pathways posed by future removal of pavement and structures by individual property owners were to be prevented through the implementation of institutional controls calling for testing and possible excavation of unremediated soils. These controls were to be in place prior to the start of the residential soil removals to ensure the integrity of the technical remedy. The City of Midvale promulgated the "Contaminated Soils Remediation Regulations" (CSRRs) on May 31, 1994 pursuant to the selected remedy, but later repealed these controls with the approval of EPA due to an Explanation of Significant Differences.

Two Explanations of Significant Differences (ESDs) were issued by the EPA for OU2 following the ROD. The first, dated June 23, 1994, stated that garden soils outside the 500 ppm lead and 70 ppm arsenic boundary would not be remediated to 200 ppm lead, and were not subject to institutional controls. A second ESD was issued in December 1998. This ESD cited EPA's decision to (1) limit the scope and cost of the RA by not remediating selected city properties and transportation rights-of-way (this cleanup responsibility was instead delegated to the city by EPA at the city's request), and (2) removing institutional controls associated with future residential construction.

An Explanation of Significant Differences was also issued by the EPA for OU1 in July 2004 to explain the significant differences between the remedy selected in the OU1 ROD and the remedy subsequent to redevelopment of the site. The OU1 Remedial Design (1994) did not designate the type or number of structures that were allowed on the cap. Failing this, Jordan Bluffs, Inc. commissioned an Environmental Site Assessment in 2003 and developed a Site Management Plan for Redevelopment (SMP) that the EPA, UDEQ and City of Midvale have accepted. The SMP establishes certain technical requirements for redevelopment activities on OU1, in order to assure remedy integrity and long-term protectiveness. The author of the SMP, Environmental Resources Management (ERM), stated in the document that, "Based on the types of structures proposed for the Site and the available geotechnical data for the tailings and soil materials beneath the cap, ERM believes that the proposed redevelopment can be performed from a geotechnical perspective." The proposed redevelopment is a mixed land use community.

4.1.2 Sharon Steel OU1 Remedy Selection

The OU1 ROD called for the following major components of the remedy:

- Tailings within 150 feet of the center line of the Jordan River were excavated and relocated on top of the existing tailings pile.

- The top two feet of soil in the mill building area was excavated and spread over the tailings pile. Clean fill was brought in to replace the soil which was removed and the area was to be re-vegetated.
- Wetlands along the Jordan River were dredged to remove contaminated sediments. The dredged material was placed on the tailings pile and the wetlands were returned to their natural state.
- Tailings on a 2.3 acre area on the west bank of the Jordan River were excavated and placed on the tailings pile.
- A five-foot vegetated soil cap (or design-based equivalent) was to be placed over the entire tailings and soil pile. The cap was designed such that it will allow access to pedestrian traffic. In order to maintain the integrity of the cap, only those structures specified in the remedial design will be allowed.
- An interceptor trench was installed along the eastern edge of the tailings pile to control subsurface lateral groundwater flow.
- Rehabilitation of the Galena Canal to control stormwater runoff.
- Installation of monitoring wells to sample and test the groundwater.
- Monitoring of shallow groundwater to ensure that ARARs are not exceeded at the points of compliance.
- Treatment of groundwater if ARARs are exceeded in compliance point monitoring wells. The goal of treatment will be to contain contaminated groundwater and prevent offsite migration.
- Onsite use restrictions of groundwater and other institutional controls which may be identified during design.

The ROD also identified three issues requiring special attention and evaluation during design of the remedy. These were:

- Potential incorporation of a flexible membrane liner (FML) into the cap to further reduce the potential for infiltration of water.
- Evaluation of geotechnical measures to reduce the potential for seismically-induced damage to the cap and underlying tailings.
- Evaluation of additional measures to reduce tailings slope instability along the Jordan River.

The remedy selected for OU1 was selected to reduce and/or eliminate potential exposure of the public to the contaminated tailings and groundwater. This was accomplished by capping the tailings in place to reduce and eliminate physical contact with the tailings, wind deposition, and potential leaching of metals into the groundwater through percolation of water through the tailings.

The media-specific cleanup levels that were developed for the COCs, based on the human health risk equivalent to a pre-specified cancer risk, hazard index, or distribution of blood-lead levels, is shown in Table 3 below.

Table 3 OU1 Cleanup Levels for Contaminants of Concern*

<i>Contaminant</i>	Cleanup Levels		
	<i>Clean Soil</i>	<i>GW Wells – West</i>	<i>GW Wells – North</i>
Arsenic	70 ppm	190 ppb	50 ppb
Lead	500 ppm	na	na

*From OU1 ROD, page 40.

EPA provided a contingency process in the ROD to allow the State of Utah to enhance the remedy for the contaminated tailings and soils on OU1. This process allowed for an alternative remedy favored by Midvale City and State officials, and local residents, which included excavation, transportation, and offsite containment of the contaminated tailings and soils from the OU1 site. This alternative proved cost prohibitive and the selected remedy was implemented.

4.2 Remedy Implementation

4.2.1 Remedy Implementation at Sharon Steel OU2

The remedy selected for OU2 was designed to remove approximately 242,000 cubic yards of contaminated soils and associated vegetation from approximately 600 residential, commercial and municipal properties in Midvale City. It was estimated that contamination extended to a depth of at least six inches over a 119 acre area and to a depth of at least 12 inches over a 14 acre area. Based on information gathered during the Remedial Investigation (RI) for OU2, EPA had anticipated that excavation to 24 inches would be sufficient in most cases.

The OU2 remedy was implemented by the State of Utah under a cooperative agreement with EPA. The U.S. Bureau of Reclamation (USBR) entered into a cooperative agreement with UDEQ to define the OU2 boundary, design the specifications and drawings, and act as oversight engineer during the remedial action work. Remediation work at OU2 was conducted over a period of 8 years from 1991 to 1998, using a phased approach.

Six phases were originally planned and separate Remedial Designs (RDs) were prepared for each phase (see Figure 5 in Attachment 1). Several general contractors were used and all contracts were awarded based upon competitive bidding. Phase I was awarded to Envirocon. Phase II was awarded to Rust Remedial Services. Phase III went to Sverdrup Environmental. Phase IV work was awarded to Rust Remedial Services. Phase V went to ASRC Contracting Company and the final Phase Va was awarded to Envirocon. Phase VI was to be conducted to remediate potentially contaminated soils along the interstate highway and railroad rights-of-way. However, the reconstruction of Interstate I-15 within the OU2 site boundaries addressed this issue, so Phase VI was cancelled. Occasionally, properties were remediated later than their assigned phase because certain residents initially refused soil testing but later consented to participate in the remedy.

Phase I Activities

Phase I work began in October of 1991 and consisted of the removal of contaminated soils along Holden and Wasatch Streets in order to assist Midvale City in a road improvement project. This work was started and completed in the fall of 1991. Tetra Tech was UDEQ's oversight and sampling contractor. In December of 1991, UDEQ requested that USBR assume the tasks of both sampling and design of the OU2 properties from Tetra Tech, Inc.

Phase II Activities

In February of 1992, a Notice to Proceed was issued to USBR by UDEQ. Activities included project management (coordination of meetings, cost tracking, consultant support, procurement of a field office and sampling laboratory); preparation of design criteria, specifications, and cost estimate; and photography and videography of properties. From June to September of 1992, the USBR performed a pilot air monitoring program, established a field office at the site and began the design of the Phase II documents. On April 13, 1993, UDEQ awarded the Phase II contract to Rust Remedial Services, Inc., a subsidiary of Chemical Waste Management, Inc. A Notice to Proceed was issued on April 29, 1993 for the Phase II remediation of 114 properties. Remediation activities began on May 20 and were completed in December, 1993.

Phase III Activities

On March 9, 1994, UDEQ awarded the Phase III contract to Sverdrup Environmental and issued a Notice to Proceed for the Phase III remediation of 197 properties. Remediation activities began April 6 and were completed in November of 1994.

Phase IV Activities

On March 7, 1995, UDEQ awarded the Phase IV contract to Rust Remedial Services. Rust Remedial Services was acquired by OHM Remediation Services during Phase IV. Two weeks later a Notice to Proceed was issued for the Phase IV remediation of 145 properties. Remedial action work started on Phase IV at the end of March and was completed in December of 1995.

Phase V Activities

UDEQ awarded the Phase V contract to ASRC Contracting Co. on April 6, 1996. A Notice to Proceed was then issued for the Phase V remediation of 137 properties. On May 9, 1996, the remedial action began, and was completed in September of 1997. On July 23, 1998, the Phase Va contract was awarded to Envirocon, Inc. The Notice to Proceed was then issued for the remediation of 2 properties. RA began on August 17, 1998, and was completed two months later on October 13, 1998.

On average, each residential property took between five and six weeks to remediate. In most cases, engineers "chased the contamination" until they found soil below the specified action levels, which on some properties entailed excavating down to 42 inches. In a number of cases, engineers were compelled to stop digging before locating clean soil because hard surfaces impeded further excavation. Throughout the course of the remedy, most residential properties were restored to their original condition, and in many cases were improved with new landscaping. Many community members were reportedly pleased to have work done on their property, because they perceived the installation of new lawns and vegetation as agency-financed economic revitalization of their community.

Each property received a one-year warranty against defects. Following remediation, EPA issued a letter to each property owner, certifying that his/her property was cleaned up and no human health problems existed. The remedy was declared construction complete on January 6, 1999, following a final joint site inspection. The final Remedial Action report was completed in March 1999.

4.2.2 Remedy Implementation at Sharon Steel OU1

Remedy Activities

The remedial activities for OU1 were conducted from May 1995 to January 1999 (see Figures 2 and 3 in Attachment 1). The USBR performed the RD for EPA. UDEQ formally awarded the RA contract on May 30, 1995, to Ogden Remedial Services, thereby initiating the RA activities described below:

<u>Remedial Activity</u>	<u>Start</u>	<u>Completion</u>
Mobilization	Jun 1995	- Nov 1995
General earth work	Aug 1995	- Sep 1996
Interceptor trench installation	Mar 1996	- Oct 1996
Cap installation	Jun 1996	- Oct 1996
Wetlands construction	Aug 1996	- Sep 1996
Well installation/Site improvements	Aug 1996	- May 1997

The remedial activities included the following remedy components.

- The tailings within 150 feet of the center of the Jordan River were excavated and removed, which was a major portion of the contract. USBR conducted a testing program to validate that all tailings were removed.
- The contractor removed all contaminated soils from the non-tailings area (mill buildings) and placed them back on the area to be capped. Mill foundations remain in the area. Clean fill replaced the excavated soil and the area was re-vegetated.
- Wetlands along the Jordan River were dredged and approximately 100,000 cubic yards of contaminated sediments were removed to the tailings pile. Excavation continued until confirmatory sampling demonstrated lead and arsenic levels were below 500 ppm and 70 ppm, respectively. The wetlands area was re-contoured according to a design prepared by Utah State University. The area was raised by 2 feet from the original design to ensure the wetlands would not be under water during the majority of the year.
- Tailings on a 2.3 acre area on the west bank of the Jordan River were excavated and placed on the tailings pile.
- A RCRA-equivalent composite cap was installed over the entire tailings pile. The cap includes a geo-composite drain underlain by a flexible membrane liner (FML) which, in turn, is underlain by a geo-synthetic clay liner that reduces the potential for water infiltration through the tailings pile. The cap is overlain by 18 inches of earth fill and 6 inches of top soil and re-vegetated throughout. The cap was designed to allow pedestrian traffic.
- A 4,000-foot long interceptor trench was installed on the eastern side of the site to further isolate the tailings from contact with water. The interceptor trench averages 15 feet in depth, and the drain consists of an 8" perforated corrugated polyethylene pipe enveloped in a clean gravel material. The interceptor trench and drain also served as the anchor trench for the geo-synthetics along the cap's eastern edge. The geo-synthetic clay liner and FML terminate at the trench invert, but the geo-composite drain extends to fully encapsulate the drain envelope material. The interceptor trench was designed to maintain a constant slope of 0.0031, with an average flow of 40 to 50 gallons per minute. This water is routed to the wetlands area to provide additional water for the system. An 8" pipe was installed instead of the 6" pipe called for in the specifications, because cost of materials were the same and evidence existed of increased subsurface water flows.
- The Galena Canal had been discontinued and the canal decommissioned prior to the ROD's information on the canal. The canal was therefore removed and not rehabilitated. This was the only remedy component change from the ROD.
- Monitoring wells were installed with dedicated pumps by the contractor along the north and western boundaries of the site in an effort to contain the arsenic groundwater plume. An arsenic action level for the northern wells was established at 50 µg/L, and a separate action level of 190 µg/L arsenic was established for the western wells bordering the Jordan River.
- The shallow groundwater was monitored during construction by both USBR and the contractor. Following sampling of the monitoring wells, EPA and UDEQ determined that treatment of groundwater was not necessary during the construction.

- Onsite use of groundwater was restricted and was not an issue during the remedial contract.
- In case of slope failure due to seismic activity, the cap is designed to contain tailings within a "150-foot setback" buffer zone to protect the Jordan River. The tailings side slopes were constructed at a 2:1 slope. About 1.5 million cubic yards of tailings and material were relocated from the 150-foot setback. During the excavation of this setback along 7800 South, two slope failures occurred between the tailings pile and the street. The failure occurred because of excessive saturation of the soils at the toe of the tailings and within the tailings embankment. The saturated material was removed and placed on top of the tailings for an extensive drying process. To prevent further failures in this area, the tailings embankment was adjusted to a 3:1 slope.

Cap Installation

The USBR designed a combination geosynthetic and earthfill cap at OU1. The 190-acre cap was designed and constructed to eliminate water from percolating through the tailings and potentially contaminating the underlying groundwater system. Several choices were considered during design, including the ROD-suggested modified RCRA liner consisting of a 2-foot thick clay layer, overlain by a 1-foot thick sand drain layer and geotextile filter, overlain by 2 feet of earthfill material. The chief problem with this proposal was the huge volume and lack of availability of material required. The design also examined the use of composite earthfill/ geosynthetic cap scenarios to replace individual earthen liner layers. A main advantage in using geosynthetics in lieu of earthen materials is that an equivalent volume of 2 feet of clay and 1 foot of sand can be exchanged for less than a ½ -inch thick equivalent geosynthetic cap. The selected cap design and profile was chosen based on the cost analysis results and the overall constructability, expectation of excellent performance, and overall low long-term maintenance of the cap.

The cap profile installed at OU1 consists of a geosynthetic clay liner (GCL) applied on top of the tailings, followed by a geomembrane consisting of 30-mil PVC membrane. On top of this was put a geocomposite drain, composed of a geonet bonded to a geotextile filter fabric. The function of the geonet is to provide support of the overlying loads, as well as to provide void space for subsurface water to gravity flow. The geotextile filter fabric was designed to effectively retain the earthfill away from the geonet, yet allow percolating water to freely pass through. On top of the geocomposite drain is an 18" layer of select earthfill. The earthfill had to be designed to be compatible with the geotextile filter below, and it had to retain moisture sufficient to sustain vegetation on the surface. The final component of the cap system is a 6" layer of topsoil and vegetation seed. The seed mix included drought tolera grasses and wildflowers which provide shallow, stable root systems to minimize erosion yet not penetrate to the geosynthetics causing the geocomposite drain to clog. All tailings and contaminated soils at the 270-acre site were excavated and relocated below this combination geosynthetic and earthfill cap. The Sharon Steel OU1 remedy was considered in 1996 to be the largest single cap application of geosynthetics to date.

The cap was structured in "swales" and "valleys" to enable all precipitation/ surface waters to drain westward at a 2% slope on top of the cap, down the western slope and into the Jordan River.

Wetlands

The ROD identified an 18-acre non-jurisdictional wetland area at the southeast corner of the OU1 site, where the Jordan River borders the area on the south. The intent of the wetlands design was to provide a location where plant and animal habitat could be preserved in a stable, yet dynamic, wetlands environment. To sustain a manageable water source for the wetlands, two flow control structures for inlet and outlet control were constructed along the banks of the Jordan River. They are located about 400 feet from one another. The structures were designed with gates on both the wetlands side and the riverside to allow the wetlands depth to be managed regardless of the elevation of the Jordan River.

The wetlands were constructed by first removing the contaminated soils. A 2,200 foot channel was then excavated along the pre-1951 historic Jordan River channel. The channel begins and ends at the flow control structures. Islands were also constructed to vary the topography to optimize the waterfowl nesting environment. The inverts of both flow control structures matched the depth of the Jordan River. When the gates of both structures are open, river water is allowed to flush through the wetland system. A static wetlands water system could also be sustained by closing the gates and relying solely on the groundwater elevation which generally matches the elevation of the Jordan River.

A separate vegetation plan was prepared for the wetlands. It incorporated state-of-the-art knowledge of wetlands habitat and an aggressive planting schedule to prevent competition from undesirable plant species. Waterfowl observed in the area include geese, ducks, herons and egrets.

Final Inspections and RA Report

A pre-final inspection of OU1 was conducted on August 13, 1998. The inspection covered punch-list items remaining to complete the RA, including graveling the maintenance road, installation of a security fence, placement of rip-rap along the Jordan River, and placement of culverts and outfall structures. Also included were final items such as removing silt fences, replacing minor sections of eroded sod, removing equipment from the site, and weed control.

The original security fence design included galvanized wire with three strands of barbed wire along the top. The City of Midvale suggested that a more visually pleasing fence be installed, and a green vinyl-coated wire fence was installed without barbed wire.

The final inspection was conducted on January 6, 1999. Present were EPA, UDEQ, USBR, US Fish and Wildlife Service, the RA contractor and the landowners representative. Each item of the remaining punch list was discussed. The cap, fences, wetlands, and other properties were inspected, and it was determined that the RA had been successfully executed and that the remedies were operational and functional. The final Remedial Action report was completed in March 1999.

4.2.3 Additional Removal Actions at Sharon Steel

Prior to the RODs, EPA's Removal program completed interim removal activities including fencing, dust prevention, and slope stabilization of some of the tailings piles.

In June of 1988, a State Administrative Order directed the then current property owner to implement dust suppression of the tailings by spraying them with a polymer coating. In 1990 a removal action fenced the site and prohibited access. In May through June of 1991, EPA's Emergency Response Branch (ERB) removed dangerous chemicals and bottled gases from the remaining mill buildings on the site. Despite the fact that the Site was fenced and the buildings locked, trespassers were entering the buildings, causing possible endangerment to themselves and others. From September of 1992 through December of 1993, EPA's ERB demolished the remaining mill buildings. Debris from the buildings was placed on the tailings pile and eventually covered when the final remedy for OU1 was completed.

4.3 Remedy Operation and Maintenance

4.3.1 Operation and Maintenance at OU2

The contracts for each phase of the Sharon Steel/Midvale OU2 remedial action included a one year warranty on all work performed by the contractor. Property owners were supplied with an operation manual detailing how to care for items such as sprinkler systems and how to properly maintain landscape items such as sod, trees and various plants. During the warranty period property owners were instructed to

contact UDEQ. The contractors were contacted by UDEQ and deficient items that fell within warranty were corrected or replaced at the contractors expense. As of March 1999 the warranty period ended on all properties remediated under the Sharon Steel OU2 contracts.

Institutional Controls were implemented to serve as the key operation and maintenance aspect at the OU2 site. The ROD stipulated that concrete and asphalt pavement, houses, some decks, and other structures were considered to be an effective barrier against exposure to possible underlying contaminants. To prevent any exposure to homeowners, an institutional control program entitled the *Contaminated Soil Remediation Regulations* (CSRRs) was implemented May 31, 1994 by the City of Midvale to prevent these structures from being removed without Midvale City's intervention and approval. The CSRRs established soil testing protocols for remediated and unremediated areas as well as requirements for remediating detected contaminants of various concentrations.

In 1997, the City of Midvale requested a review of the CSRRs, because the city believed the risk assessment techniques used to develop the CSRRs were antiquated and the CSRRs were burdensome and unnecessary. To address this concern, a team consisting of members from UDEQ, USBR, EPA, and Midvale City was formed to thoroughly analyze the CSRRs as they applied to each individual property. An EPA toxicologist worked with USBR to conduct a residual risk analysis on each property within the OU2 boundary. The residual risk calculations were based exclusively on surface soil lead concentrations, since EPA considers residential contact with soil to be within the top 2 inches. Additionally, soils that remained on properties because they were covered by concrete, etc. were assumed to have the same average lead concentration as exposed soils.

EPA determined that if the estimated average lead level was higher than 500 mg/kg (assuming that 50 percent of the unremediated covered area was someday removed), then the property would require continuing CSRRs. To calculate the residual risk, the areas of remediated surfaces and unremediated surfaces were first determined for each property. Since it varied, the type of unremediated surface was documented, i.e. the total area of concrete sidewalks, total area of retaining walls, etc., was calculated. Maps of each property showing the covered unremediated surfaces and spreadsheets of calculated areas were prepared for future reference. The long term exposure risk was then calculated assuming that 50 percent of the unremediated covered surface was removed. This risk was determined based on an weighted average lead concentration per property, since it was assumed that a person's exposure would be random in all areas of their property.

In some instances, there was a concern that this method of determining residual risk was not conservative enough. Each of these instances were individually addressed. First, some properties were more than 70 percent covered, creating an uncertainty of the validity of the pre-remediation sample results. To add an additional degree of safety on these properties, the residual risk was calculated assuming that 100 percent of the covered areas were someday removed. Secondly, there was a concern of possible acute exposure; i.e. an area of covered surfaces someday being uncovered and left uncovered for a long period of time in an area where children played frequently. To address this concern, properties with any one sample result greater than 4,000 mg/kg were analyzed individually.

When all calculations were completed, it was determined that several city-owned properties and only one privately-owned property required continuing CSRRs. Therefore, the CSRRs remain on those properties, and were released on all other properties. Residents in Midvale, Salt Lake County, and HUD were notified of the release of the CSRRs on the majority of the properties in Midvale.

4.3.2 Operation and Maintenance at OU1

The objectives for OM&M at the OU1 site are to:

- 1) maintain the engineered cover and vegetation;

- 2) maintain the drainage systems and erosion protection features;
- 3) prevent the Jordan River from intruding into the site and eroding into the cap or tailings;
- 4) control site access, future development at the site, and restrict the use of groundwater at the site; and
- 5) provide reports to document site conditions including any problems, repairs, and/or development activities.

UDEQ is the lead agency for implementation of work associated with operations, maintenance, and monitoring at the OU1 site, with the EPA as the support agency. OM&M activities are governed by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the regulatory framework of its Trust Fund Program (commonly known as Superfund), and the Superfund Amendment and Reauthorization Act (SARA) of 1986.

UDEQ is responsible for establishing and maintaining the OM&M files and for submitting quarterly reports on OM&M activities to the EPA in accordance with the Cooperative Agreement on OM&M between DEQ and the EPA. USBR completed the OM&M Plan for UDEQ in October 2001 and EPA, Midvale and the property owner had input on its development. UDEQ has been complying with the plan in carrying out its OM&M responsibilities. The OM&M manual provides for revisions to reflect requirements that may change over time. DEQ, EPA, or Midvale City may propose changes to this plan. UDEQ or EPA, upon making a determination that the O&M Manual is inadequate to protect human health and the environment or preserve the integrity of the remedy, may take actions as necessary to ensure the protection of human health and the environment and to preserve the integrity of the remedy. UDEQ is responsible for observing and reporting any conditions which could, if left unaddressed, result in deterioration of the remedy. Should such conditions occur, the DEQ shall consult with EPA and direct repairs as needed.

UDEQ is responsible for performing regular quarterly inspections and monitoring tasks as shown in Table 4 below. UDEQ supplies the landowner with a copy of the regular inspections and monitoring results within 60 days after such inspection. The OU1 site was largely unattended until 2003 when preparation for redevelopment began.

All excavations performed within Midvale City rights of way conform to the Midvale City Code Chapter 12.12, "Excavations Within City Rights of Way". All work is conducted in accordance with applicable Occupational Safety and Health Administration (OSHA) rules and regulations. Any contractor hired to perform maintenance or repairs will be required to have a Health and Safety Plan prior to beginning any work at the OU1 site.

Development will be permitted on the capped area if, and only if, it will maintain the integrity of the composite cover. Development of water wells for any purposes on the capped area, except for any testing, sampling or monitoring wells required by the State or the EPA, is prohibited.

Table 4. - Inspections and Monitoring Tasks

Quarterly:

Inspect fencing, signs, gates, and locks for damage
USBR to provide OM&M data and reports to DEQ

DEQ to submit OM&M reports to EPA

Spring and late summer/early fall:

Inspect soil cover for deep tap root plants and noxious weeds

Inspect soil cover for burrowing rodents

During spring runoff and after major storm events:

Inspect site and soil cover for saturation or ponding of surface runoff

Inspect interceptor trench and drains for obstructions, erosion, or debris

Inspect ditches and culverts for obstructions and debris

Two times per year:

Mow weeds as required by city ordinances (property owner)

Annually:

Inspect site roads for poor surfacing or rutting

Inspect Jordan River east bank for erosion, undercutting, instability

Inspect slopes along Jordan River east bank for erosion

Inspect structures for obstructions and debris

Inspect soil cover for erosion or inadequate vegetation

Inspect soil cover slopes for instability

Groundwater monitoring and analyses

Every Five Years:

Five year review

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Section 5

Progress Since Last Five-Year Review

This is the second five-year review for the site, but the first in-depth review. The first Five-Year Review was a Type Ia review, and is a 4.5 page document. The Type Ia review was written before completion of the OU1 and OU2 remedies. Its "Conclusions and Recommendations" section states, "The ongoing remediation, and the implementation of the remaining remedies of the OU1 ROD and the OU2 ROD, as amended by the ESDs, should be continued." The report issued a Statement of Protectiveness certifying that the remedies, when fully implemented, would remain protective of human health and the environment. The first five-year review, dated February 26, 1999, was written before the EPA's June 2001 "Comprehensive Five-Year Review Guidance" was issued.

The progress on the Sharon Steel site that has occurred since the last five-year review includes the following:

- Completion of both OU1 and OU2 remedies on January 6, 1999.
- Completion of the first Five-Year Review (Type Ia) on February 26, 1999, by EPA.
- Completion of the Preliminary Close-Out Report on May 12, 1999, by EPA.
- Completion of the draft Final Close-Out Report. Document not finalized.
- Development and completion of the OM&M Manual in October 2001, by UDEQ.
- Quarterly Site Inspections, followed by reports and maintenance, by UDEQ.
- Annual Groundwater Monitoring, and reporting requirements met by UDEQ.
- JWCD established a Test Well across from Sharon Steel to pump the shallow US&G Aquifer. Five more wells are planned for 2006 across from Sharon Steel.
- The annexation of the entire OU1 site into Midvale City.
- The establishment of a Jordan River Parkway Trail by Midvale City.
- UDEQ has responded to numerous requests from city residents for cleanup letters or property contamination information.
- The purchase of the site by a new property owner, Jordan Bluffs, Inc., in January 2004.
- Adoption of an "Institutional Control Process Plan" for OU1 on May 4, 2004 by Midvale City Council, and acceptance by EPA, UDEQ, and Jordan Bluffs, Inc.
- May 2004: JWCD suggests testing their well influent annually to determine if the SS OU1 groundwater contamination plume is being affected by their pumping.

Progress Since Last Five-Year Review

- On 7-2-04 EPA signed an OU1 Explanation of Significant Differences to address redevelopment. This ESD was advertised 7-8-04 for a 30-day public comment period.
- The acceptance of the "Site Modification Plan for Redevelopment" on July 9, 2004, by EPA and UDEQ. The Plan was written by ERM for the property owner.
- On 07-14-04 the Salt Lake County Recorder's Office filed UDEQ DERR's "Notice of Release of Access Agreements" to release over one hundred and forty OU2 properties from grants of access, which dated back to April 1995.

More detail on the site's progress since the last Five-Year Review can be obtained from Section 2, Site Chronology.

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Section 6

Five-Year Review Process

6.1 Administrative Components

The Sharon Steel Superfund Site five-year review team was led by Elizabeth Yeomans, UDEQ project manager, and included EPA's project manager Armando Saenz, and UDEQ's staff toxicologist, with expertise in the areas of geology, risk assessment, and civil/environmental engineering. David Allison of UDEQ acted as the community involvement coordinator for the five-year review.

The review was initiated in September 2003 with groundwater monitoring and included the following:

- Community involvement
- Local interviews
- Document review
- Data review
- Groundwater monitoring
- Site inspection
- Five-year review report development and review

The schedule for the review extended through August 2004.

6.2 Community Notification and Involvement

UDEQ published notices in the Salt Lake Tribune and the Deseret News on July 10, 2004, to notify the community that UDEQ was conducting the Sharon Steel five-year review. The notices identified Elizabeth Yeomans and David Allison of UDEQ as points of contact if community members wished to request information or participate in an interview. At least one information query was received.

Interviews were conducted with various parties connected to the Site. The interviews were completed in July 2004, and were conducted by the UDEQ Community Involvement Coordinator. The following individuals were interviewed:

- 1. Scott Miller, Vice President of AREVA, contact for Mining Remediation Recovery Corporation (MRRC), former Sharon Steel Property owner; interviewed May 17, 2004.
- 2. Michelle Baguley, Grant Administrator, Citizens for a Safe Future for Midvale; interviewed May 17, 2004.
- 3. Lee King, Midvale City Administrator, interviewed May 20, 2004.
- 4. Verdon Walker, Citizens for a Safe Future for Midvale; interviewed May 25, 2004.

- 5. Rick Scott, U.S. Bureau of Reclamation; interviewed May 27, 2004.
- 6. Dennis Spackman, Citizens for a Safe Future for Midvale; interviewed June 3, 2004.
- 7. David May, President, Citizens for a Safe Future for Midvale (Technical Assistance Grant Recipient); interviewed June 11, 2004.
- 8. Ben Magelsen, President of Createrra, owner of Jordan Bluffs, Inc; interviewed June 17, 2004.

6.3 Document Review

In preparing this five-year review, the following documents were reviewed:

- Five Year Review (Type Ia), Sharon Steel Superfund Site, February 26, 1999, by EPA.
- EPA Record of Decision, Sharon Steel (OU2), September 24, 1990.
- EPA Record of Decision, Sharon Steel (OU1), December, 1993.
- Explanation of Significant Differences, Sharon Steel (OU2), June 1994.
- Explanation of Significant Differences, Sharon Steel OU2, December 1998.
- Sharon Steel Wetland Plan, July 1, 1996, by Utah State University for USBR.
- SS OU1 Capping Remedial Action, Requisition No. RA-5048 Specifications, USBR for UDEQ & EPA.
- RA Report, Sharon Steel Operable Unit 1, March 1999, by USBR for UDEQ.
- RA Report, Sharon Steel Operable Unit 2, March 1999, by USBR for UDEQ.
- Preliminary Close Out Report, SS Superfund Site, May 12, 1999, by EPA.
- *Protecting Public Health at Superfund Sites: Can Institutional Controls Meet the Challenge?*, 1999, Environmental Law Institute.
- Baseline Risk Assessment for the Sharon Steel Tailings Site Operable Unit 1, May 1992.
- Baseline Risk Assessment for Groundwater, Sharon Steel/ Midvale Tailings Site, October 1990.
- Operation, Maintenance, and Monitoring Manual for Sharon Steel OU1 Superfund Site, October 2001.
- Salt Lake Valley Groundwater Management Plan, June 2002; Division of Water Rights, Utah Department of Natural Resources.
- Technical Memorandum, "Southwest Groundwater Treatment Project Shallow Groundwater Model Analysis", August, 2003. By Chris Mikell and Jeanae Johnson with Bowen Collins & Associates, Inc., for Richard Bay and Mark Atencio, Jordan Valley Water Conservancy District.
- Quarterly Site Inspection Reports, by UDEQ for EPA, 2001 – 2004.
- 2000, 2001, 2002, 2003 Annual Groundwater Monitoring Reports for SS OU1, by UDEQ for EPA.
- Site Modification Plan for Redevelopment, Sharon Steel Superfund Site, February 12, 2004, by Environmental Resources Management for Mercury Financial.

- Institutional Control Process Plan, OU1 Sharon Steel, May 4, 2004, by Midvale City.
- Final Close Out Report, SS Superfund Site, August 2004, by EPA.

Full reference citations are included in Attachment 2 for each document reviewed.

ARARs

Applicable or relevant and appropriate requirements (ARARS) were reviewed to determine whether any changes to the ARARs has occurred since the signing of the ROD and ESDs that could impact the protectiveness of the remedy at the site. The results of this review are discussed in Section 7.2, "Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives (RAOs) Used at the Time of the Remedy Selection Still Valid?"

BRAs

The baseline risk assessments (BRAs) for both OU1 and OU2 were reviewed. It was determined under this review that there have been a few changes to toxicity criteria used in these risk assessments, as follows:

Reference Doses

- 1) EPA National Center for Environmental Assessment (NCEA) has an oral Reference Dose (RfD) for aluminum of 1.0 mg/kg-day (OU1 HHRA did not have an RfD for aluminum).
- 2) EPA IRIS has revised the oral RfD for beryllium from 5E-3 mg/kg-day (presented in OU1 HHRA) to 2E-3 mg/kg-day.
- 3) EPA NCEA has an oral RfD for cobalt of 2E-2 mg/kg-day (OU1 HHRA did not have an RfD for cobalt).

Cancer Slope Factors

- 1) EPA IRIS has revised the oral Cancer Slope Factor (CSF) for arsenic from 1.8 (mg/kg-day)⁻¹ to 1.5 (mg/kg-day)⁻¹.
- 2) EPA has withdrawn the oral CSF for beryllium, indicating that the database is inadequate for the assessment of carcinogenicity. The OU1 HHRA uses the old oral CSF for beryllium and, based upon the now withdrawn CSF, beryllium was one of the cancer risk drivers for both soil and groundwater.

6.4 Data Review

The remedy includes an annual groundwater and surface water monitoring program designed to track groundwater and Jordan River contaminant levels and to evaluate the groundwater plume's mobility. In preparing this five-year review report, data from the past seven years of monitoring activities were reviewed and evaluated. A summary of these data and their interpretation for demonstrating remedy performance is provided below. Sample locations are shown in Attachment 1, Figure 3. Sample results are tabulated in Attachment 3.

6.4.1 Groundwater

The purpose of the groundwater monitoring program is to ensure that remedial objectives are being met. The goal of the remedy is to contain the contaminated groundwater plume beneath the site and continue to prevent offsite migration. This is accomplished through conducting annual sampling of groundwater and

surface water along with analytical data interpretation. The action levels are shown below in Table 3. The action level for the northern site boundary wells was established for arsenic at the National Primary Drinking Water Standard of 50 ppb. The action level for the western boundary wells and the surface water samples (two in the Jordan River and one at the Interceptor Trench outfall) was set at 190 ppb arsenic, to protect aquatic life. The SS OU1 site is a designated Restricted Area in the *Salt Lake Valley Groundwater Management Plan* (June 2002), issued by the Utah Department of Natural Resources, Division of Water Rights.

Table 3 OU1 Cleanup Levels for Contaminants of Concern*

<i>Contaminant</i>	Cleanup Levels		
	<i>Clean Soil</i>	<i>GW Wells – West</i>	<i>GW Wells – North</i>
Arsenic	70 ppm	190 ppb	50 ppb
Lead	500 ppm	na	na

*From OU1 ROD, page 40.

The specific objectives of the monitoring are to:

- Determine if arsenic concentrations in the groundwater are remaining steady, increasing or decreasing.
- Determine if arsenic in the Upper Sand and Gravel Aquifer (US&G) has migrated downward into the Deep Principal (DP) Aquifer (Salt Lake's Drinking Water Aquifer).
- Determine if the US&G arsenic plume has migrated to the north or west, beyond the boundaries of the site.
- Determine if the Jordan River is being affected by groundwater discharge.
- Determine if the integrity of the remedy is being maintained.

During Five-Year Reviews, all accessible wells are sampled. The monitoring well statistics are cited in Table 5 below. Samples were analyzed for both total and dissolved arsenic. The long-term trend of arsenic concentrations in ground and surface water on the OU1 site were identified by the following activities:

- 1) Track groundwater levels and arsenic concentrations in the deep principal aquifer.
- 2) Track groundwater levels and arsenic concentrations in the necessary compliance point monitoring wells completed in the upper sand and gravel aquifer.
- 3) Track arsenic concentrations in the Jordan River.
- 4) Track arsenic concentrations in the Interceptor Trench effluent.
- 5) Use quality assurance/quality control samples to determine sampling accuracy.

TABLE 5. SHARON STEEL OU1 MONITORING WELL STATISTICS							
Well ID	Total Depth	Aquifer	Screen Intvl.	Action Level	Well Diam.	Slot Size	Comments
MW-OU1-1A	32.0	US&G	18.7 - 28.7	50 ppb	6	0.01	Well dry in 2002 & 2003
MW-OU1-2A	25.0	US&G	11.5 - 21.5	50 ppb	6	0.01	
MW-OU1-3A	19.5	US&G	5.0 - 15.0	50 ppb	6	0.01	
MW-OU1-4A	16.0	US&G	4.5 - 14.5	50 ppb	6	0.01	
MW-OU1-5A	20.0	US&G	7.5 - 17.5	190 ppb	6	0.01	
MW-OU1-6A	19.0	US&G	6.5 - 16.5	190 ppb	6	0.01	
MW-OU1-7A	17.0	US&G	5.0 - 15.0	190 ppb	6	0.01	
MW-OU1-8A	18.0	US&G	6.5 - 16.5	190 ppb	6	0.02	
MW-OU1-9A	18.0	US&G	6.5 - 16.5	190 ppb	6	0.02	
MW-OU1-10A	18.2	US&G	6.3 - 16.3	190 ppb	6	0.02	
MW-OU1-11A	19.0	US&G	7.0 - 17.0	190 ppb	6	0.02	
MW-OU1-12A	18.5	US&G	6.8 - 16.8	190 ppb	6	0.01	
MW-OU1-13A	19.0	US&G	7.0 - 17.0	190 ppb	6	0.01	
MW-OU1-14A	18.5	US&G	6.7 - 16.5	190 ppb	6	0.01	
MW-OU1-15A	18	US&G	6.5 - 16.5	190 ppb	6	0.01	
MW-401	249.5	DP	236.1 - 245.1	50 ppb	3	0.02	Background for DP
MW-402	87.1	US&G		50 ppb	3		Background for US&G
MW-404	33.4	P	19.8 - 29.3	50 ppb	2	0.02	Background for P
MW-551	43.0	US&G	31.9 - 40.9	50 ppb	3	0.02	Background for US&G
MW-552	23.2	US&G	12.3 - 21.3	50 ppb	3	0.02	Background for US&G
MW-651	184.5	DP	174.5 - 183.4	190 ppb	3	0.02	Background for DP
MW-702	42.0	US&G	21.9 - 40.3	50 ppb	3	0.02	Background for US&G
Surface Samples:							
JR Upstream	SW	(Surface Water Sample)		190 ppb			9000 South
JR Downstream	SW	(Surface Water Sample)		190 ppb			7200 South
Interceptor Trench	SW	(Surface Water Sample)		190 ppb			Outfall
AQUIFERS:							
	P =	Perched Aquifer					
	US&G =	Upper Sand & Gravel Aquifer (Shallow)					
	DP =	Deep Principal Aquifer (Drinking Water aquifer)					

Five-Year Review sampling took place from September 17 – 21, 2003, and was performed by the USBR for UDEQ. Analytical results are found in Attachment 3. The Salt Lake area, and most of Utah, was in its fifth consecutive year of drought conditions, according to Salt Lake area meteorologists. This condition continues to be observed in two of the wells. Well MW-1A was dry for the second year, at a depth of 29.4 feet below ground surface (bgs). A second well, MW-651, is normally artesian, with water flowing over the top of its well casing due to internal hydrostatic pressure. For the last two years the water level in this well was found to be below the top of the well casing.

Data were evaluated to determine whether any monitoring wells exceeded the prescribed action limits, and one well again had an exceedance. Total and dissolved arsenic (As) again exceeded the action level for well MW-7A, reaching 290 ppb dissolved As. Well MW-7A has averaged **321 ppb dissolved As** since well monitoring began in 1997, and has consistently exceeded its action level. Well MW-2A did not have an exceedance this year, although it has six times in the past seven years. Well MW-15A, another occasionally high arsenic content well, this year recorded 52 ppb dissolved As, below its action limit of 190 ppb As. The level of arsenic in the background wells continue to show these as being clean and well below the action level set in the Record of Decision.

In answer to the specific objectives posed above, arsenic concentrations at the SS OUI site are remaining steady. Arsenic present in the US&G aquifer has not migrated downward into the DP aquifer. The US&G arsenic plume has not migrated to the north or beyond the western boundaries of the site. MW-7A contamination is believed to be influenced or caused by its proximity to Bingham Creek and its location in the old Bingham Creek channel. Site groundwater is not significantly affecting the Jordan River. Finally, the integrity of the remedy is being maintained. The selected remedy remains protective of human health and the environment.

6.4.2 Surface Water Sampling and QA/QC

Surface water sample results indicate that arsenic concentrations in the Jordan River are below the applicable site action levels (190 ppb As) and that the river appears to be functioning as a flow boundary to the US&G aquifer, as the shallow aquifer discharges to the Jordan River. The upstream Jordan River sample at 9000 South was 9 ppb dissolved As, and the downstream sample at 7200 South recorded similar amounts at 9.4 ppb dissolved As. The interceptor trench surface water sample on the east side of the site and off the cap recorded 7 ppb dissolved arsenic, significantly below the specified Federal AWQC of 190 ppb As. This indicates the trench is working as designed to direct shallow, perched groundwater around the tailings pile in an effort to assist in de-watering the tailings beneath the cap.

QA/QC sampling shows the data collected during this monitoring event are of known and suitable quality and quantity. There were no deviations from the Sampling and Analysis Plan noted. Sixteen QA/QC samples were taken during the Five-Year Review round of sampling. The field blanks and rinsate samples were all below their detection limits. The Blind Standard tested at 400 ug/l As, a confidence level of 86.96% for the QC range cited of 405-495 ug/L. This standard may not have had a higher confidence level (>95%) because the standard was shortly due to expire in 10/2003. Eight Duplicate QA/QC samples were taken on 4 wells and very accurately reflect the original samples, as can be seen in Table 5, Attachment 3.

6.4.3 Soil Sampling

A property located at 8234 South Main Street in Midvale was sampled by UDEQ in November 2003 at the request of EPA. The property owner was planning to sell the property and there was no record of previous sampling having been performed on the property. The average soil concentration for lead on the property was 333 ppm, with arsenic averaging 61 ppm. These concentrations were below the action levels of 500 ppm lead and 70 ppm arsenic and EPA issued the property owner a letter on November 26, 2003, stating the property did not require environmental remediation.

6.5 Site Inspection

For the past three years, site inspections have been performed quarterly using the Site Inspection Checklist in Table 6. Follow up items from the inspections are addressed to ensure proper site maintenance. The

most recent inspection occurred May 21, 2004. Site walkovers were also performed on April 28 and June 13 for this five-year review to observe the current status of OU1 and OU2, and visits to the City of Midvale and Salt Lake County were conducted on July 7 to determine what deed restrictions or institutional controls are in place. The site inspection forms are provided in Attachment 4. The photographic record documenting site conditions at the time of the inspections is included in Attachment 5.

Table 6.

SITE INSPECTION CHECKLIST	YES	NO
<u>PERIMETER (OUTER) FENCE:</u>		
1. Does the fence appear to be intact, with no signs of illegal entry?	<input type="checkbox"/>	<input type="checkbox"/>
2. Are the fence, gates, and locks free from damage?	<input type="checkbox"/>	<input type="checkbox"/>
3. Is the fence free of unsightly weeds, trash, and flammable vegetation?	<input type="checkbox"/>	<input type="checkbox"/>
<u>SECURITY (INNER) FENCE:</u>		
4. Does the fence appear to be intact, with no signs of illegal entry?	<input type="checkbox"/>	<input type="checkbox"/>
5. Are the fence, gates, and locks free from damage?	<input type="checkbox"/>	<input type="checkbox"/>
6. Is the fence free of unsightly weeds, trash, and flammable vegetation?	<input type="checkbox"/>	<input type="checkbox"/>
<u>REMEDIATION SITE (NOT INCLUDING COMPOSITE COVER)</u>		
7. Do roads provide an adequate driving surface free from ruts or poor surfacing?	<input type="checkbox"/>	<input type="checkbox"/>
8. Does the site appear to be free from saturation or ponding of surface water?	<input type="checkbox"/>	<input type="checkbox"/>
9. Are interceptor trench and drains free from debris, silt, or other obstructions?	<input type="checkbox"/>	<input type="checkbox"/>
10. Are interceptor trench and drains free from erosion?	<input type="checkbox"/>	<input type="checkbox"/>
11. Is the site free of unsightly weeds, trash, and flammable vegetation?	<input type="checkbox"/>	<input type="checkbox"/>
<u>COMPOSITE COVER</u>		
12. Is the soil cover free from erosion?	<input type="checkbox"/>	<input type="checkbox"/>
13. Do slopes appear to be stable?	<input type="checkbox"/>	<input type="checkbox"/>
14. Is the soil cover free of holes or other signs of burrowing rodents?	<input type="checkbox"/>	<input type="checkbox"/>
15. Is there adequate vegetation covering the soil cap?	<input type="checkbox"/>	<input type="checkbox"/>
16. Is the soil cap free of unsightly weeds, trash, and flammable vegetation?	<input type="checkbox"/>	<input type="checkbox"/>
17. Is the soil cap free of noxious weeds or deep tap root plants?	<input type="checkbox"/>	<input type="checkbox"/>
18. Are ditches and culverts free from debris, silt, or other obstructions?	<input type="checkbox"/>	<input type="checkbox"/>

JORDAN RIVER EAST RIVERBANK

19. Is the riverbank free from signs of erosion or undercutting? ☐ ☐
20. Is riprap and vegetation adequate to prevent intrusion of the river onto the site? ☐ ☐

A visit was conducted to Salt Lake County to determine if any deed restrictions are in place for the site. Research at the County Recorder's Office revealed that an old grant of access was in place on the OU2 properties. The grant of access dated from April 1995 and provided access for UDEQ to conduct surveys, sampling, and other such items. It is believed this was required at the time because the RA was to be conducted in Phases, taking more than several years to complete. On July 14, 2004, a Notice of Release of Access Agreements was recorded with the Salt Lake County Recorder's Office. This document releases the various "Consent for Access to Property" forms signed by OU2 property owners.

No deed restrictions were found for the undeveloped OU1 parcel. According to the County Development Services Office, deed restrictions are not placed on a property until the site is subdivided. Because OU1 is undeveloped, the county has not put deed restrictions on the property. Deed restrictions are also not put in place until the property owner instructs the county to do so.

A visit to the City of Midvale revealed that OU1 is now part of the Jordan Bluffs Planned Development, which allows for mixed use development only if it is allowed by the environmental status of that portion of the site. Any proposed development at the site will have to go through the city's approval process, which will allow the city control of the construction completed as part of that development.

6.6 Interviews

Interviews were conducted with various representatives of the community regarding the Sharon Steel Superfund Site in Midvale, Utah. Interviews were conducted by Dave Allison of the Utah Department of Environmental Quality and took place from May 17 through June 17, 2004.

The primary concern expressed by most of those interviewed is the exciting possibility for redevelopment of a vast portion of the non-residential area of the Sharon Steel site (approximately 265 acres). An impermeable membrane capping remedy for this area (OU1) has complicated construction options for the city for 10 years. The lack of redevelopment opportunities represents a great amount of lost revenue for Midvale City during a time the Salt Lake Valley is experiencing tremendous growth.

As far as the Sharon Steel remediation cap functioning and protecting human health and the environment, there were no short-term concerns expressed. The site remains well fenced and vegetated with no noticeable erosion occurring over the last five years which may have disturbed the integrity of the cap. Future environmental concerns of the Community Technical Assistance Group (TAG), Citizens For a Safe Future for Midvale (CFSFM), regard the Jordan River adjacent to the Sharon Steel site. CFSFM is not sure how vulnerable the Jordan River is to the contaminants below the cap leaching through groundwater into the stream. The Sharon Steel cap rests on a terrace above the river and concerns remain as to whether leaching groundwater, a flood or a landslide event could pose future threats. The Jordan Valley Water Conservancy District also owns water rights in the area and may install wells, which could pull contaminated groundwater from the site and towards the Jordan River.

Midvale City also has concerns regarding long-term restrictions placed upon the City by EPA and UDEQ

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Five-Year Review Process

in regard to institutional controls. Concerns include the City's ability to monitor developers in the area over time and work with homeowner associations once residential areas are built. Other concerns relate to oversight authority and resources the city will require, and how city costs will be paid. Also, the city questioned what the realistic expectations should be that Midvale can assure the contamination never becomes a problem in the future since the city views this as a daunting responsibility.

City officials are pleased with the current working relationships between all of the agencies involved in addressing the Site. Early on, relationships were adversarial at times, but have improved greatly over the past few years. They are cautiously optimistic that work on the remedy (actually "moving dirt") will begin soon. They urge that the regulatory agencies continue the spirit of cooperation so that there are no changes to clean up standards in the future, which would further delay implementation of their redevelopment goals.

Some confusion exists regarding the separation of the Midvale Slag Site from the Sharon Steel Tailings Site in Midvale. A number of those interviewed simply combine the two sites in their minds.

Interview records are provided in Attachment 6.

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Section 7

Technical Assessment

7.1 Question A: Is the Remedy Functioning as Intended by the Decision Documents?

A review of the documents, data, ARARs, and the results of the site inspections indicate that the remedy for OU2 is functioning as intended by the 1990 ROD, as modified by the 1994 and 1998 ESDs, and remains protective. Contaminated soils were excavated to a depth of 24 inches and replaced with clean fill on almost 600 residential and commercial properties, as stipulated by the ROD.

Based on a similar review and the results of site inspections for OU1, the entire remedy for OU1 is currently functioning as intended by the 1993 ROD. Contaminated tailings were consolidated with contaminated soils from the OU2 cleanup and covered by a geotextile cap and membrane, as stipulated by the ROD. Groundwater monitoring is conducted annually and quarterly site inspections of the OU1 site are being performed. The OU1 site is poised for redevelopment and geotechnical studies are being conducted to determine what the site and cap can accommodate.

A number of issues were identified as part of the review that are of concern and a summary of these issues is presented below.

1. Jordan Valley Water Conservancy District: In 1999 a test well was installed by JWCDC to the west of the Sharon Steel Site to test the potential for pumping drinking water for the Salt Lake Valley populace from the shallow Upper Sand and Gravel Aquifer (US&G). The Jordan River lies between the western boundary of the site and the test well. Five additional wells are planned in this area by 2006. Many more wells are planned by JWCDC up and down the Jordan River, but these six wells have the most immediate potential to affect the Site. The SS OU1 groundwater contaminant plume is currently stable, as the results of monitoring for seven years have shown. There is a concern that pumping of the JWCDC wells could potentially affect the movement of the SS plume, possibly drawing it under the Jordan River, and/or changing the groundwater flow, and/or changing water levels at the SS site.

In August 2003, JWCDC shared with UDEQ and others a Technical Memorandum that discussed groundwater modeling it had conducted to assess the potential impacts of the proposed JWCDC shallow aquifer wells (pumped at 1 cfs) on groundwater flow and water levels in the adjacent area, including the Sharon Steel Superfund Site. Model results for 5-, 10-, and 40-year pumping scenarios indicated a drawdown of 8-10 feet, which would occur in the immediate vicinity of the JWCDC wells. The model results showed there are virtually no changes to the shallow groundwater system and water levels east of the Jordan River. The results indicate that under the proposed pumping scenario the Jordan River will act as a hydrogeologic recharge boundary and would minimize impacts to the SS groundwater system. The Technical Memorandum is on file at UDEQ. In comments on the Technical memorandum from September 2003, the City of Midvale requested that the MODFLOW model be repeated with additional parameters and that the contaminated US&G aquifer beneath both Sharon Steel and Midvale Slag to the immediate north be taken into consideration when placing their future wells. At this time the MODFLOW model has not been repeated.

JWCDC is required by State Drinking Water regulations to test the water produced from the shallow aquifer for metals every three years. UDEQ has requested that JWCDC perform metals monitoring on the

influent stream from these shallow aquifer wells on an annual basis. UDEQ also suggested the monitoring take place in low surface water periods (fall) when both the JWCD wells and the Jordan River have a greater impact on groundwater migration because of their respective "draw" potential. This monitoring program would assist us to assess if the extraction program is or is not causing the migration of the arsenic plume located in the US&G aquifer beneath the Sharon Steel Site. Some language related to this subject will be recommended to be included in the Natural Resource Damage (NRD) Proposal between Kennecott and JWCD.

2. Groundwater Monitoring in Well MW-7A: Arsenic is present in MW-7A at concentrations greater than the action level of 190 ppb total As established in the Record of Decision for this site. This well has been above the established action level all 19 times it has been sampled since May 1997. EPA and UDEQ evaluated this exceedance in 2001 and concluded the Record of Decision provides for an evaluation of whether exceedances at the compliance point will require implementing a pump and treat system. While MW-7A has consistently been above its action level, the data collected from the downstream Jordan River location indicate there has been no concurrent measurable increase in arsenic levels in the river. EPA and the State also determined that this well was completed in the old Bingham Creek channel, which contains tailings washed down from the Kennecott Bingham Mine. It is likely that the Bingham Creek tailings are the source of the arsenic contamination, rather than groundwater contamination emanating from tailings under the cap. Based on this information, EPA and the State determined that activation of a pump and treat contingency was not currently warranted. Rather, the best course of action is to continue monitoring to ensure that arsenic levels do not rise in the Jordan River and that the remedy maintains its protectiveness.

3. OU2 Contamination: The 1990 ROD for OU2 allowed contamination to remain in place under paved areas and structures and stated that Institutional Control's (ICs) were deemed necessary to protect against harmful exposure in the event of future excavation. According to the ROD, ICs would be implemented "to require building permits prior to construction during removal or replacement of pavements or foundations." They would also "be employed to regulate the installation of new gardens." The requirement for regulation of new gardens was removed in a 1994 ESD. Also in 1994, on May 31, the City of Midvale enacted the ICs prescribed for OU2 as *Contaminated Soils Remediation Regulations (CSRRs)*, which established soil testing protocols for remediated and unremediated areas as well as requirements for remediating detected contaminants of various concentrations. EPA set aside funds to cover the City's cost of administering the *CSRRs*.

In August of 1998, the *CSRRs* were removed via city ordinance and replaced with regulations governing excavation within city rights-of-way. This was followed in December 1998 by an ESD which cited EPA's decision to (1) limit the scope and cost of the RA by not remediating selected city properties and transportations right-of-ways, and (2) removing institutional controls associated with future residential construction.

The Environmental Law Institute published a Research Report in 1999, in which Sharon Steel ICs were examined. The concluding paragraph is cited as follows:

"As time progresses, though, the likelihood of residents taking protective measures to control the risk of residual contamination on their properties will probably diminish. EPA's latest round of "clean letters," combined with the pervasive disbelief among Midvale residents and city officials that a threat ever existed in their community, will likely perpetuate a potentially misleading sense of security about residential properties in OU2. Without an official mechanism for notifying residents of the residual risks in their neighborhood, the likelihood of awareness of contamination being passed along to

future residents is low. Had federal, state, or local officials imparted a sense of understanding about contamination risks on Midvale residents, concern about the dangers present in their neighborhood could have alerted generations to come, even in the absence of an official notification mechanism. However, the discontinuance of the residential ICs program, the nature of site record keeping, and the common attitude toward the threats of mining waste will likely allow the collective memory of residential Midvale as a Superfund site to fade in the years to come.”

While the Law Institute’s concern regarding the low likelihood of the awareness of residual contamination being passed along to future residents is probably valid, it is important to note that the December 1998 ESD did not require that residents take protective measures or that an official mechanism for notifying future residents of residual risk be in place. The ESD relied on an evaluation of residual risk that indicated that all residential properties, except one, had been cleaned up sufficiently that the residual contamination did not pose a significant risk, even if the hard surface covers were removed. This risk evaluation assumed that concentrations beneath hard surfaces were equivalent to soil concentrations prior to cleanup.

One of the OU2 residential properties had lead levels that exceeded 4,000 ppm under its hard surfaces. To ensure the technical remedy remained protective at this property, the City agreed to work with the owner to explain the options if excavation was needed under the walkways. According to the Law Institute report, city officials also went on record with a commitment to informally monitor the use of that property. The City elected not to implement a single IC at this property because it seemed illogical to enact a municipal ordinance concerning only one home.

4. Wetland function and structure: The 18-acre non-jurisdictional wetland area at the southeast corner of the OU1 site was re-contoured according to a design prepared by Utah State University. The design also ensured the wetlands would not be under water during the majority of the year. To sustain a manageable water source for the wetlands, two flow control structures for inlet and outlet control were constructed along the banks of the Jordan River, located about 400 feet from one another. The structures have gates on both the wetlands side and the riverside to allow the wetlands depth to be managed regardless of the elevation of the Jordan River. When the gates of both structures are open, river water is allowed to flush through the wetland system. A static wetlands water system could also be sustained by closing the gates and relying solely on the groundwater elevation, which generally matches the elevation of the Jordan River.

During the past five years, the wetlands has operated as a static system. This has worked well during the past six years of drought. However, if precipitation or storm water runoff increases in the future, the gates may need to be operational and refurbished. Currently the gates are overgrown with weeds and sediments. The new property owner stated on page 9 of the Site Modification Plan for Redevelopment that it will preserve the wetlands and incorporate them into the open space of the proposed redevelopment plans. Potential enhancements may be implemented, such as altering the vegetation types, adding footpaths, and aerating the water to promote circulation. The property owner has been provided a copy of the 1996 Sharon Steel Wetland Plan prepared by Utah State University.

5. Institutional Controls: In April 1995, UDEQ filed a “Notice of Access Agreements” with the Salt Lake County Recorder’s Office. Approximately 144 properties in SS OU2 contained the grant of access, which gave notice that EPA, UDEQ, and USBR had rights to access the properties to perform sampling and remedial actions. During this Five-Year Review, UDEQ discovered the grant was still in affect. On July 9, 2004, the DERR Division Director signed a “Notice of Release of Access Agreements” which

releases the 1995 agreements. The executed Notice was recorded at the Salt Lake County Recorder's Office on July 14, 2004.

The Partial Consent Decree entered in 1990 by the U.S. District Court of Utah, Central Division, (Civil No. 89-C-136) is undergoing partial termination this fall pursuant to a "Stipulation and Joint Motion for Modification and Termination of Partial Consent Decree". If that Motion is granted by the Court, it will enter an Order Granting Stipulation and Joint Motion for Modification and Termination of Partial Consent Decree and thereafter the PCD will no longer apply to the Sharon Steel and Midvale Slag Superfund Sites, with the exception of the Survival Clause. This clause provides that Sections I DEFINITIONS, III JURISDICTION, IV PARTIES BOUND, VI THE STATE [RELEASE], VII EFFECT OF SETTLEMENT, VIII COVENANT NOT TO SUE, IX IMPLEMENTATION OF PLAN OF REMEDIATION, X PRESERVATION OF OTHER CLAIMS, XI NOTICES, XIV GRANT OF ACCESS (as modified), XV WITNESSES AND DOCUMENTS, XVII COSTS, AND XVIII RETENTION OF JURISDICTION of the PCD and, pursuant to the Motion, the Survival Clause itself will survive termination. There are provisions in the PCD under which Institutional Controls will survive termination.

An *Institutional Control Process Plan for Sharon Steel OU1* (ICPP) was adopted on May 4, 2004, by Midvale City, and agreed to by EPA, UDEQ, and Jordan Bluffs, Inc. The ICPP states that it will be used to facilitate redevelopment of the site in compliance with the ESD and the SMP. The ICPP documents the requirements and procedures for Institutional Controls for the capped portion of OU1 and areas where monitoring wells are present. Future property owners of any portion of the OU1 site will be bound by the provisions of the ICPP. The ICPP describes the process through which enforceable institutional controls will be developed and implemented that will facilitate future construction activities on the site. The ICPP also establishes the requirements through which development, including single family residential uses, will be allowed. Roles and responsibilities are identified that private parties and federal, state, local, and municipal entities will perform. The next Five-Year Review (2009) can evaluate how the ICPP is working.

Site plan approvals will be required and regulated by Midvale City, along with grading and drainage plans. All property within OU1 is to be included within a Property Owner's Association (POA). The ICPP states that the POA shall be responsible for maintenance and repair of the Cap (including soil covers) beneath property within its boundaries, as well as all landscaped areas. The City will make the necessary repairs to covers and barriers if the landowner or POA fails to do so. The ICPP further states that all construction and redevelopment activities within the Site shall be in accordance with the SMP. Further oversight and enforcement roles and responsibilities are detailed in the ICPP.

No other Institutional Controls were discovered for Sharon Steel during this review.

6. Redevelopment: Redevelopment of the SS OU1 site has begun this year, with the purchase of OU1 on January 26, 2004, by Jordan Bluffs, Inc. General redevelopment plans proposing a mixed land use community are outlined in a *Site Modification Plan for Redevelopment* (SMP) by Environmental Resources Management for the property owner, dated February 12, 2004, on file at UDEQ and EPA Region 8 offices. The SMP identifies the requirements that will ensure that no material modifications to the ROD and ESD result from redevelopment, and that the integrity and effectiveness of the remedy will be maintained despite redevelopment. An OU1 ESD, which explains the significant differences between the remedy selected in the OU1 ROD and the remedy subsequent to redevelopment of the site, was signed by EPA on July 2nd. No comments were received during the 30-day Public Comment period on the ESD, which began July 8th.

7. Remedy Maintenance and Protectiveness Plans: In October 2001, an *Operation Maintenance, and Monitoring Manual* for SS OU1 was issued, and since that time the manual has been implemented by UDEQ for EPA. With the advent of a new property owner and redevelopment occurring, modifications will be needed to define changes in tasks and responsibilities. The State and EPA will continue Quarterly Site Inspections during and after redevelopment. EPA and UDEQ will continue to work with the new property owner(s) and Midvale City to certify protectiveness of the remedy.

7.2 Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives (RAOs) Used at the Time of the Remedy Selection Still Valid?

Exposure Assumptions

Baseline risk assessments (BRAs) were developed in 1990 for both soils/ tailings (May 1990) and groundwater (October 1990) to evaluate potential human health risks associated with site contamination in the absence of any remedial action. The BRAs were completed prior to the separation of the site into OU1 and OU2. The BRA found that the contamination which existed at the Sharon Steel Site posed carcinogenic and toxic risks to human and environmental receptors. For OU2, human receptors were the primary concern. For OU1, both human and environmental receptors were of concern. OU2 was originally, and remains, a residential and commercial land use zone. The exposure assumptions in the BRA considered residential use for OU2, and these exposure assumptions are still valid at this time.

The exposure assumptions in the BRA also considered residential use for OU1. The 1993 OU1 ROD stated, "In the future, it is possible that OU1 could be redeveloped for commercial or residential purposes." The OU1 ROD also stated that workers or residents would be exposed to OU1 contaminants if contamination were left in place without remediation. The capping remedy provided a barrier against risks to human and environmental receptors as long as the remedy remains intact. Future land use considered in the ROD included residential use at OU1 as long as the cap is not compromised. The human exposure assumptions for OU1 are still valid at this time.

Environmental receptors at risk from exposure to the OU1 contamination included vegetation, aquatic life and wildlife. The potential risk to the receptor and receptors higher in the food chain were believed to be the result of exposure to contaminated soil/tailings as well as contaminated surface water and sediments. Wildlife in the wetlands habitat was felt to be at risk from contaminants directly through contact with contaminated surface waters or sediments, or indirectly through consumption of organisms living in the surface waters or sediments, or of larger insects or animals feeding on these organisms.

The following OU1 remedial actions addressed both human and environmental receptor risks: tailings were excavated within 150 feet of the Jordan River including on the west bank; the wetlands were dredged along the Jordan River to remove contaminated sediments; and the tailings were capped. Groundwater and surface water sample results from the past seven years of monitoring indicate that no exposed contamination remains in sediments along the Jordan River or in Jordan River surface waters. Onsite use

restrictions of groundwater were delineated in a 2002 Salt Lake Valley Groundwater Management Plan. Annual groundwater monitoring and quarterly site inspections are performed to monitor the conditions of the cap, the wetlands and the Jordan River to ensure the remedy remains protective of human and environmental receptors.

Toxicity Data

There have been several revisions to the toxicity data used in assessing risk since the ROD was signed. The changes have been made to both reference doses and cancer slope factors. These changes include:

Reference Doses

- 1) EPA National Center for Environmental Assessment (NCEA) has an oral RfD for aluminum of 1.0 mg/kg-day (OU1 HHRA did not have an RfD for aluminum).
- 2) EPA IRIS has revised the oral RfD for beryllium from 5E-3 mg/kg-day (presented in OU1 HHRA) to 2E-3 mg/kg-day.
- 3) EPA NCEA has an oral RfD for cobalt of 2E-2 mg/kg-day (OU1 HHRA did not have an RfD for cobalt).

Cancer Slope Factors

- 1) EPA IRIS has revised the oral CSF for arsenic from 1.8 (mg/kg-day)⁻¹ to 1.5 (mg/kg-day)⁻¹.
- 2) EPA has withdrawn the oral CSF for beryllium, indicating that the database is inadequate for the assessment of carcinogenicity. The OU1 HHRA uses the old oral CSF for beryllium and, based upon the now withdrawn CSF, beryllium was one of the cancer risk drivers for both soil and groundwater.

As a follow up to the five-year review completed for Midvale Slag OU1 in 2003, the revised toxicity criteria presented above were used in reevaluating the Midvale Slag OU1 preliminary remediation goals (PRGs). (For information on this reevaluation see the technical memorandum entitled Preliminary Remediation Goals and Decision Making Process at Midvale Slag OU1 referenced in Attachment 2.) Since the chemicals of concern and potential exposure scenarios evaluated for Midvale Slag OU1 are similar to those at Sharon Steel, the ranges of plausible PRGs cited in the technical memorandum are considered the same for both sites. The Sharon Steel cleanup levels for OU1 and OU2 fall within the ranges of plausible PRGs and are therefore considered to remain protective of human health.

ARARs

The document review included an evaluation of whether ARARs identified in the OU1 and OU2 RODs were still appropriate and/or needed to be updated. Remedial action construction activities have been completed for both OU1 and OU2 and there have been no changes in action or location-specific standards that would affect the protectiveness of the remedies. However, several changes to chemical-specific standards have occurred that could potentially affect the remedy for OU1. These changes and their potential impacts have been evaluated as part of the five-year review and are summarized below:

Arsenic Maximum Contaminant Level (MCL): The OU1 ROD established an action level of 50 ug/L for arsenic for the northern boundary monitoring wells based on the primary drinking water MCL. However, EPA recently promulgated a new (and lower) MCL for arsenic of 10 ug/L that will go into effect on January 23, 2006. This new MCL could potentially be relevant and appropriate, but compliance would be problematic. Arsenic levels in one of the northern boundary wells (MW-2A) have exceeded the new MCL in every sampling event, except one, since monitoring began in 1997. Arsenic levels in this well have ranged from 7.8 to 76 ug/L. The other northern wells have occasionally exceeded the new MCL, but

generally less frequently and at lower contaminant levels. Since groundwater at the site is not currently being used as a source of drinking water and there are restrictions regarding future use, the remedy remains protective despite the change in the MCL. However, after the new MCL becomes effective, the issue of whether modification of the arsenic action level is warranted should be further evaluated, perhaps during the next 5-year review.

Antimony and Thallium MCLs: State primary drinking water MCLs for antimony (6 ug/L) and thallium (2 ug/L) have been promulgated since the OU1 ROD was completed. Sampling results presented in Table 1-7 of Volume II of the OU1 Feasibility Study and Table 14 of the ROD suggest that groundwater at the site may not comply with these standards as potentially relevant and appropriate requirements. The geometric mean concentration for antimony in groundwater samples was 30.18 ug/L and the geometric mean concentration for thallium results was 4.81 ug/L. Since groundwater is not currently being used as a source of drinking water and there are restrictions regarding future use, the remedy remains protective despite the promulgation of the new standards. However, because the data presented in the FS and ROD are somewhat dated and groundwater monitoring since 1997 has been limited to arsenic analysis, it is recommended that the annual groundwater monitoring for 2004 include thallium and antimony analysis for samples taken from the background and northern monitoring wells. This information can then be used to assess whether establishment of action levels for these metals is warranted.

Numeric Criterion for Aquatic Wildlife for Arsenic: The OU1 ROD established an action level of 190 ug/L for surface water monitoring points and for groundwater wells on the west side of the site (next to the Jordan River). This level was based on the State numeric criterion for aquatic wildlife for trivalent arsenic (4-day average). A new (and lower) criterion of 150 ug/L has recently been promulgated. However, except for Well MW-7A, which was apparently installed in Bingham Creek tailings and is not considered representative of groundwater conditions downgradient of the Sharon Steel repository, all of the monitoring wells and surface water monitoring points have had results well below the new criterion since July of 1997. Unless concentrations at the monitoring points increase significantly and begin to exceed the new standard, there is no need to modify the current action level in order for the remedy to remain protective.

7.3 Question C: Has Any Other Information Come to Light that Could Call Into Question the Protectiveness of the Remedy?

No other information than the matters covered in Sections 7.1 and 7.2 has come to light during the five-year review that could call into question the protectiveness of the remedy. A 30-day Public Comment period was activated 7-8-04 for the Sharon Steel OU1 ESD, and no comments were received.

7.4 Technical Assessment Summary

- According to the data reviewed, the site inspection and interviews, the remedy is functioning as intended by the OU1 and OU2 RODs, in addition to the 1994 and 1998 OU2 ESDs.

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Section 8 Issues

Based on the information collected during this five-year report, the following issues summarized in Table 7 were identified.

Table 7
Issues Identified

<i>Issue No.</i>	<i>Issue</i>	<i>Affects Current Protectiveness of Remedy</i>	<i>Affects Future Protectiveness of Remedy</i>
1	The Jordan Valley Water Conservancy District is adding five wells to the west of the Sharon Steel site, for a total of six wells that will be used for drinking water. Their modeling shows the pumping should not affect movement of the SS contaminant plume, but this bears watching.	No	Potentially
2	Groundwater monitoring over the last seven years has consistently shown well MW-7A to be over its action level of 190 ppb As. While this was to have triggered pump and treatment technology for the well, EPA and UDEQ evaluated the well's history and concluded that its location is responsible for the exceedance.	No	No
3	OU2 contamination remains in place under hard surfaces because the Remedial Action did not remove it. However, the 1998 ESD does not require that residents take protective measures if the hard surfaces are removed.	No	No
4	Wetland function and structure. The wetland gates are not currently being used and have become overgrown with vegetation and sediment in the last six years. However, the wetland system is functioning as intended.	No	No
5	Institutional Controls. (a) Grants of access on OU2 properties dating from 1995 were discovered during this review. The grants allowed for agency access to conduct sampling and remedial actions. (b) The 1990 Partial Consent Decree (PCD) is undergoing partial termination this fall pursuant to a "Stipulation and Joint Motion for Modification and Termination of Partial Consent Decree." There are provisions in the PCD under which Institutional Controls will survive termination. (c) An Institutional Control Process Plan (ICPP) for Sharon Steel OU1 was adopted on May 4, 2004, by Midvale City and agreed to by EPA, UDEQ, and Jordan Bluffs, Inc. The ICPP documents the requirements and procedures for institutional controls for the capped portion of OU1 and areas where monitoring wells are present.	No	No
6	Redevelopment of OU1 is set to occur, following geotechnical studies by the property owner and the findings of what the cap can support while maintaining the remedy's integrity. The property owner has also developed a Site Modification Plan for Redevelopment (SMP) to ensure that redevelopment activities are protective of the remedy. An ESD which addresses redevelopment was signed by EPA in July of 2004, and explains the significant differences between the remedy selected in the OU1 ROD and the remedy subsequent to redevelopment of OU1.	No	Potentially
7	Remedy Maintenance and Protectiveness Plan. An OM&M Manual for SS OU1 was written and implemented during the last five-year review period. With the advent of a new property owner and redevelopment occurring, modifications will be needed to the Manual to define changes in tasks and responsibilities. UDEQ will continue Quarterly Site Inspections during and after redevelopment.	No	No
8	Several changes to chemical-specific ARARs have occurred that could potentially affect the remedy for OU1.	No	Potentially

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Section 9

Recommendations and Follow-Up Actions

The recommendations and follow-up actions for the issues identified are summarized in Table 8.

Table 8
Recommendations and Follow-Up Actions

<i>Issue No.</i>	<i>Issue</i>	<i>Recommendation for Follow-Up</i>	<i>Lead</i>	<i>Status</i>
1	The Jordan Valley Water Conservancy District is adding five wells to the west of the Sharon Steel site, for a total of six wells that will be used for drinking water. Their modeling shows the pumping should not affect movement of the SS contaminant plume, but this bears watching.	JVWCD has signaled its intention to UDEQ to annually monitor the influent from its wells to determine if pumping is affecting the SS groundwater contaminant plume. UDEQ will receive a copy of the analytical results.	UDEQ	The five additional wells are not planned to be operational until late 2007. UDEQ will monitor the sample results once the wells are operational and report on conditions in each annual groundwater monitoring report for SS.
2	Groundwater monitoring over the last seven years has consistently shown well MW-7A to be over its action level of 190 ppb As. While this was to have triggered pump and treatment technology for the well, EPA and UDEQ evaluated the well's history in 2001 and concluded that its location is responsible for the exceedance.	EPA and UDEQ evaluated this well in 2001 and determined pump and treatment of GW was not warranted. This well is consistent in its contaminant values.	UDEQ	Groundwater monitoring will continue to be performed and conditions at well MW-7A evaluated each year, with conditions reported in the annual groundwater report.
3	OU2 contamination remains in place under hard surfaces because the Remedial Action did not remove it. However, the 1998 ESD does not require that residents take protective measures if the hard surfaces are removed.	In 1998 Midvale City agreed to monitor one residential property where contaminant values exceeded 4,000 ppm lead.	Midvale City	The 1998 ESD does not require protective measures for remaining contamination.
4	Wetland function and structure. The wetland gates are not currently in use and have become overgrown with vegetation and sediment. However, the static system is functioning as intended.	The property owner, Jordan Bluffs Inc., has agreed to maintain the wetlands environment.	Property Owner	The wetland system is operating as intended.
5	Institutional Controls. (a) Grants of access on OU2 properties dating from 1995 were discovered during this review. The grants allowed for agency access to conduct sampling and remedial actions. (b) The 1990 Partial Consent Decree is undergoing partial termination this fall pursuant to a "Stipulation and Joint Motion for Modification and Termination of Partial Consent Decree." (c) An Institutional Control Process Plan (ICPP) for Sharon Steel OU1 was adopted on May 4, 2004, by Midvale City and agreed to by EPA, UDEQ, and Jordan Bluffs, Inc. The ICPP documents the requirements and procedures for institutional controls for the capped portion of OU1 and areas where	(a) Grants of access were removed on July 14, 2004, when Salt Lake County Recorder's Office recorded UDEQ's "Notice of Release of Access Agreements". (b) There are provisions in the PCD under which Institutional Controls will survive termination. (c) The ICPP can be evaluated at the next Five-Year Review.	(a) UDEQ (b) Federal (c) Midvale	(a) Taken care of in July 2004. (b) Underway, with Institutional Controls surviving termination. (c) Evaluate during next Five-Year Review.

Section 9
Recommendations and Follow-Up Actions

	monitoring wells are present.			
6	Redevelopment of OUI is set to occur, following geotechnical studies by the property owner and the findings of what the cap can support while maintaining the remedy's integrity. The property owner has also developed a Site Modification Plan for Redevelopment (SMP) to ensure that redevelopment activities are protective of the remedy. An ESD which addresses redevelopment was signed by EPA in July of 2004, and explains the significant differences between the remedy selected in the OUI ROD and the remedy subsequent to redevelopment of OUI.	The property owner is conducting geotechnical studies, and the City's engineers will approve final designs for redevelopment.	Property Owner and City of Midvale	On-going. The SMP can be evaluated during the next Five-Year Review to see how it is working.
7	Remedy Maintenance and Protectiveness Plan. An OM&M Manual for SS OUI was written and implemented during the last five-year period. With the advent of a new property owner and redevelopment occurring, modifications will be needed to the Manual to define changes in tasks and responsibilities. UDEQ will continue Quarterly Site Inspections during and after redevelopment.	The OM&M Manual will be modified as needed to reflect the changing roles and responsibilities of tasks during and after redevelopment.	UDEQ	UDEQ will modify the OM&M manual in the next year and as needed. Distribution list members will receive the modifications.
8	Several changes to chemical-specific ARARs have occurred that could potentially affect the remedy for OUI.	<p>(1) The arsenic action level should be evaluated during the next five-year review to decide if modification is warranted because of the new MCL (10 ug/L) for arsenic that will become effective on 01-23-06. Thallium and antimony analysis should be added to the annual groundwater monitoring. The information can then be used to assess whether action levels for these metals are needed.</p> <p>(2) A new arsenic standard of 150 ug/L has been promulgated for Aquatic Wildlife. There is no need to modify the current action level of 190 ug/L in order for the remedy to remain protective.</p>	EPA and UDEQ	<p>(1) UDEQ and EPA will evaluate if a modification is warranted.</p> <p>(2) Thallium and antimony can be added to the sampling plan beginning with this year's (2004) monitoring.</p> <p>(3) A modification of the current action level for arsenic in surface water is not needed in order for the remedy to remain protective unless concentrations rise significantly. This will be evaluated yearly in the sampling report.</p>

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Section 10

Protectiveness Statement(s)

The remedy as implemented at OU1 and OU2 of the Sharon Steel Superfund Site, is functioning as intended by the decision documents and remains protective. Because the undeveloped OU1 portion of the site currently has no receptors exposed to the contamination, and the cap is currently functioning as designed, the remedy is currently protective. The property owner and City of Midvale are working to determine which structures can be built upon the cap with no negative impact to the OU1 remedy. The property owner is also conducting geotechnical studies of the site, the results of which will be published shortly. In order for the remedy to be protective in the long-term, the remedy will continue to be monitored, the effects of redevelopment will be evaluated, and the follow-up actions in Table 8 will be taken.

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Section 11

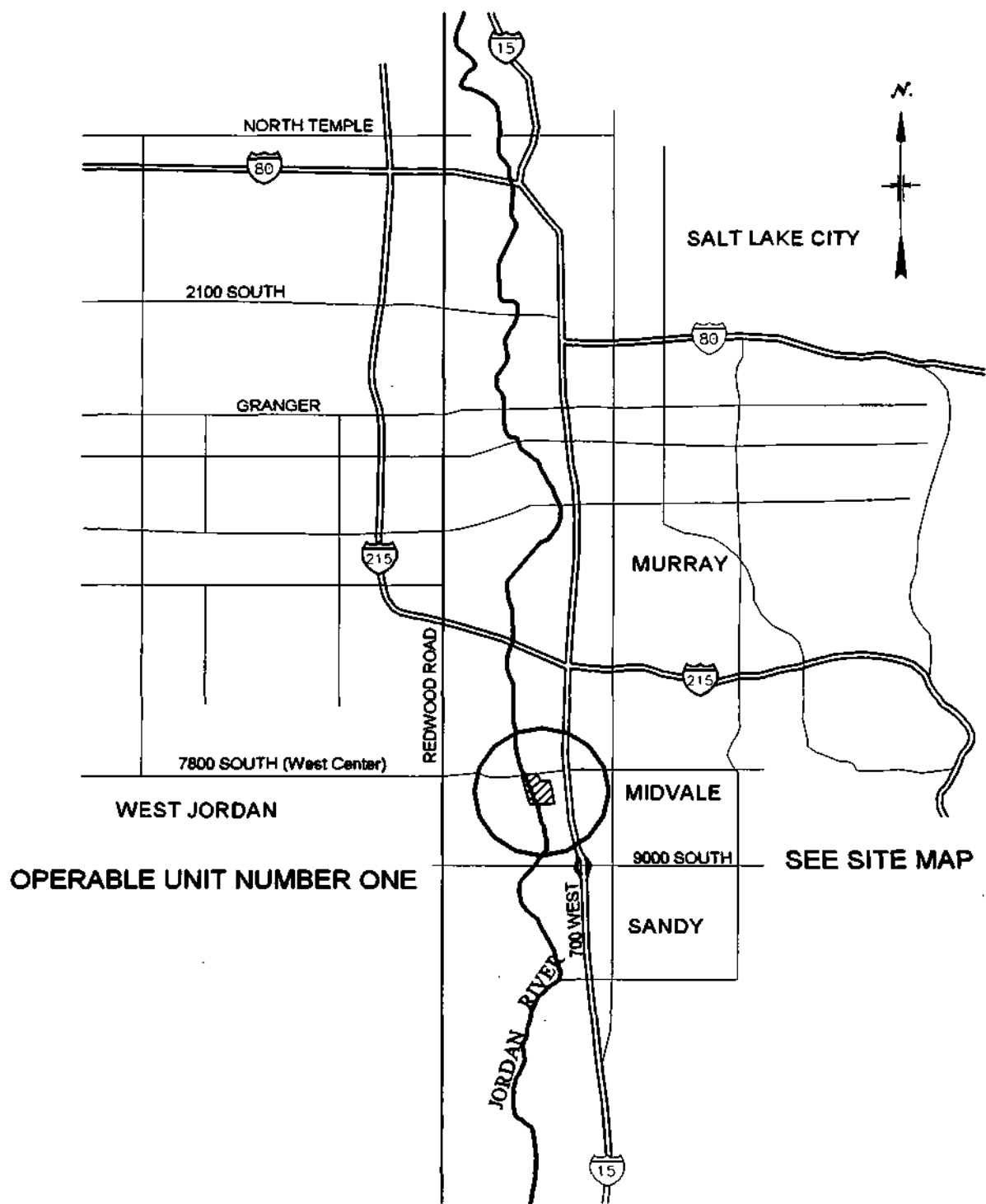
Next Review

The next five-year review for the Sharon Steel Site is required by September 2009, five years from the date of this review.

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Attachment 1

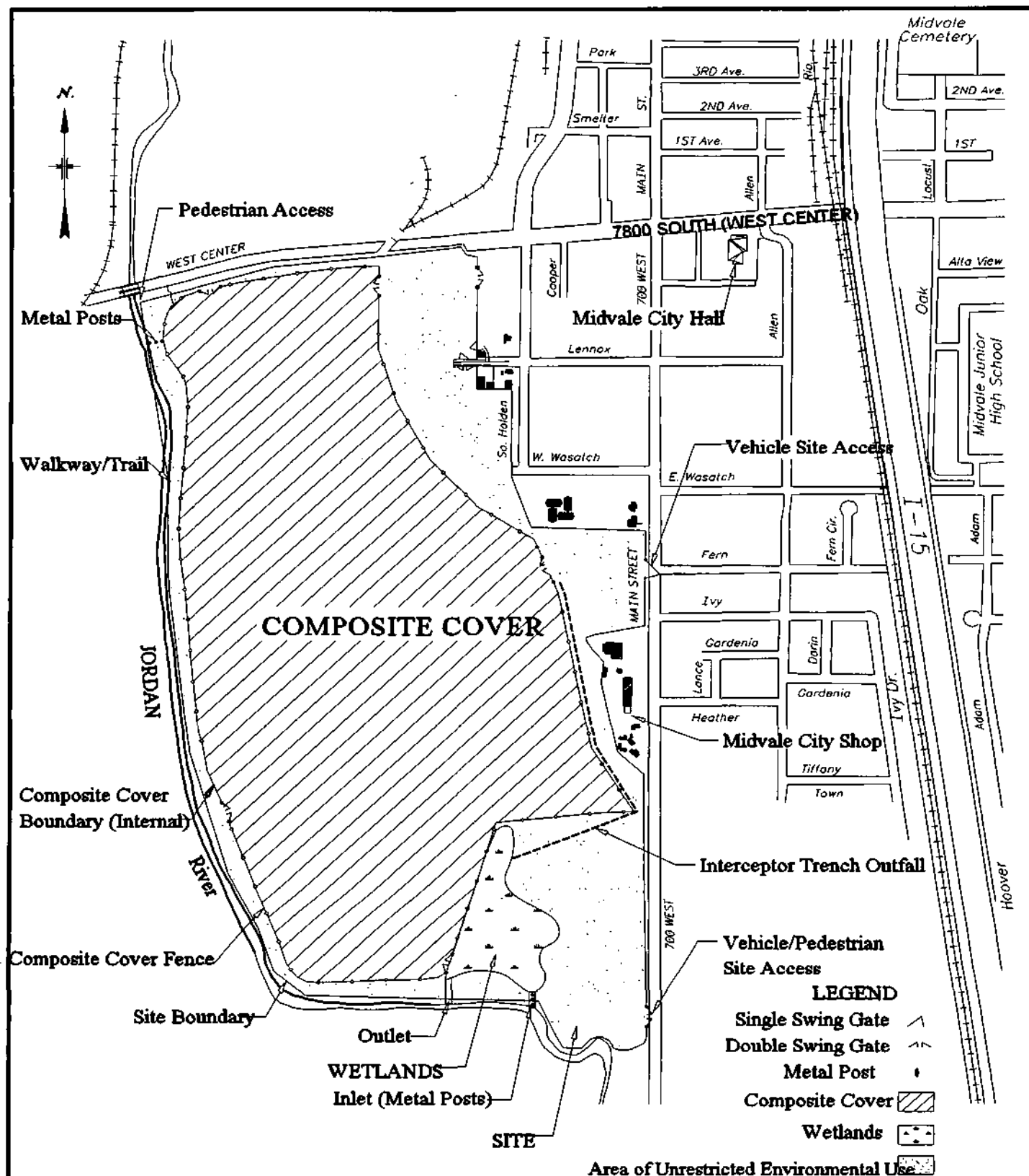
Figures



SHARON STEEL OPERABLE UNIT NO. 1 LOCATION MAP

NOT TO SCALE

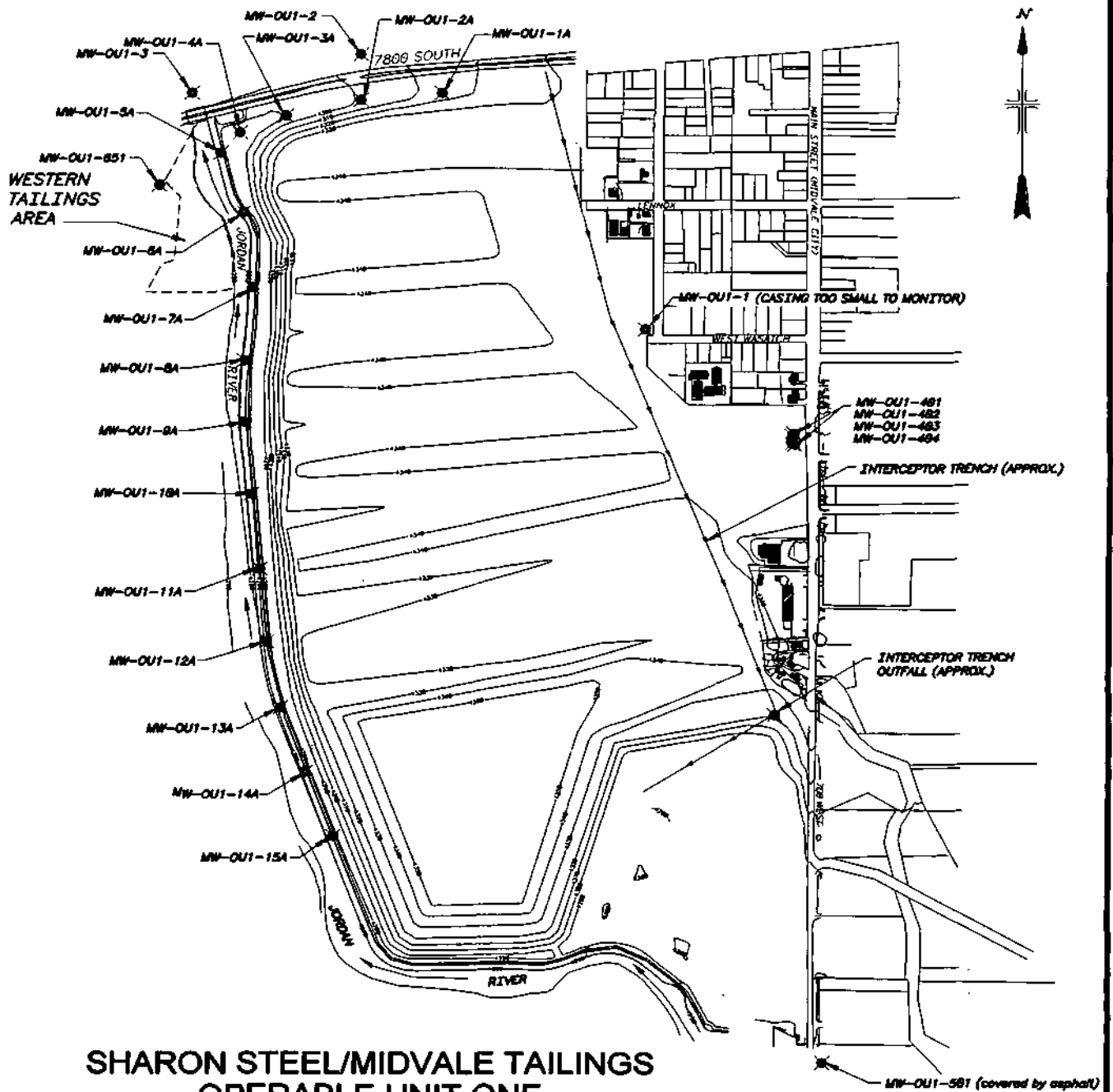
FIGURE 1



SHARON STEEL OPERABLE UNIT NO. 1 SITE MAP

NOT TO SCALE

FIGURE 2



SHARON STEEL/MIDVALE TAILINGS OPERABLE UNIT ONE SAMPLING LOCATIONS

- ✱ Monitoring Wells sampled during Five-Year Reviews
- ✱ Active Monitoring Wells Under Present Contract

MW-OU1-781

MW-OU1-551
MW-OU1-552

FIGURE 3

Color Map(s)

The following pages
contain color that does
not appear in the
scanned images.

To view the actual images, please
contact the Superfund Records
Center at (303) 312-6473.

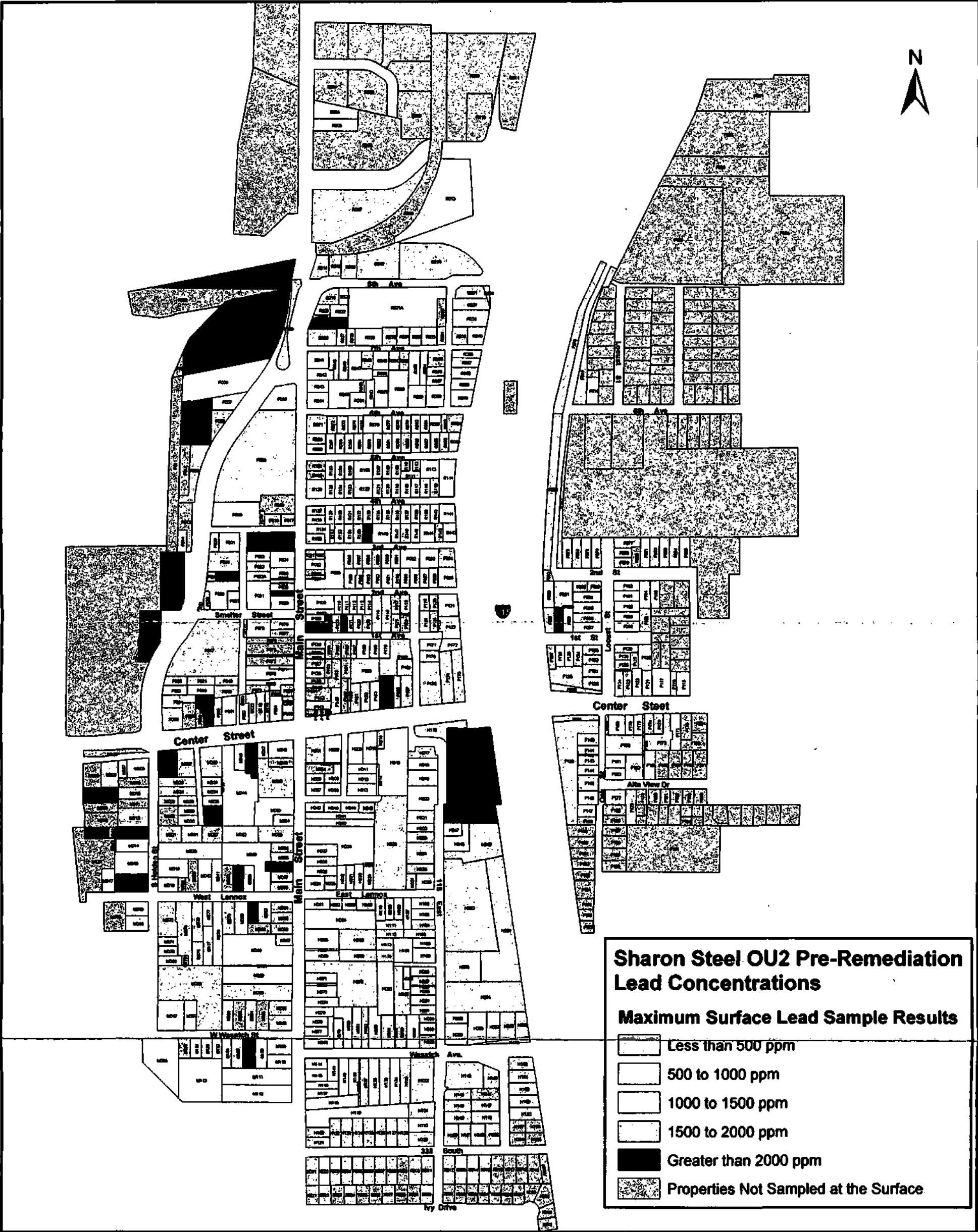


FIGURE 4

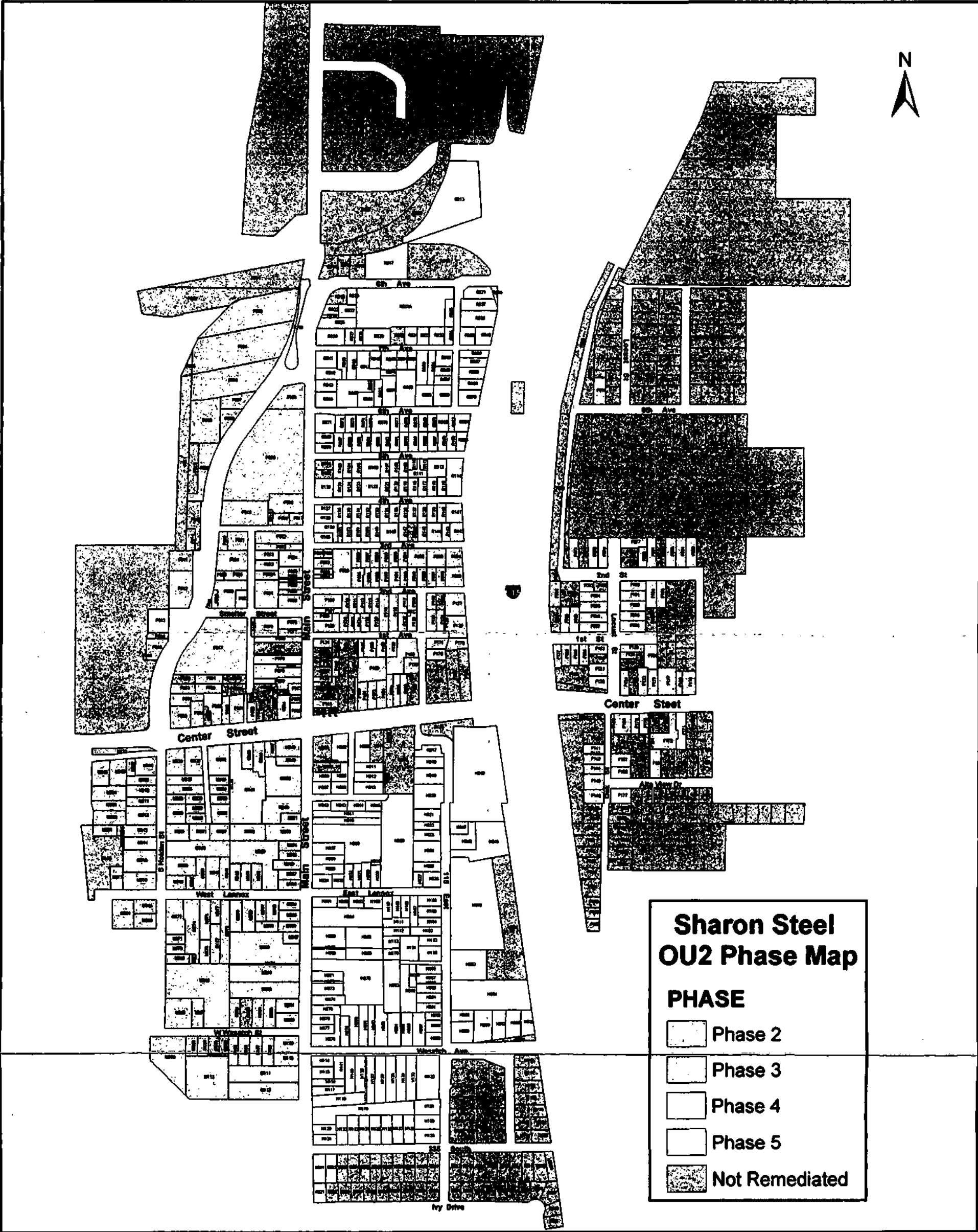


FIGURE 5

Attachment 2

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Attachment 3
Additional SS OU1
Monitoring Sample Results

TABLE 5. ALL MONITORING SAMPLE RESULTS FOR SHARON STEEL

SHARON STEEL OU1 GROUNDWATER AND SURFACE WATER SAMPLING RESULTS																						
Smpl Dates	Action Level	May-97	Jul-97	4th Qtr-97	Nov-97	Dec-97	1st Qtr-98	Feb-98	Mar-98	2nd Qtr-98	May-98	Aug-98	4th Qtr-98	1st Qtr-99	2nd Qtr-99	4th Qtr-99	Ann-2000	Ann-2001	Ann-2002	Ann-2003	Ann-2004	
Smpl Location	In ppb	Total As	Diss. As	Diss. As	Diss. As	Diss. As	Diss. As	Diss. As	Diss. As	Diss. As	Diss. As	Diss. As	Diss. As	Diss. As	Diss. As	Diss. As	Diss. As	Diss. As	Diss. As	Diss. As		
MW-1A	50	<5	<5	<5	NS	NS	6	NS	NS	<5	NS	35	<10	<10	<10	<10	<4.5	<5	Well Dry	Well Dry		
MW-2A	50	60	30	36	45	45	67	47	46	76	55	25.4	47.2	59.7	72.6	38.4	44	18	7.8	12		
MW-3A	50	6	11	<5	NS	NS	12	NS	NS	10	NS	11.2	10.3	15	<10	<10	9	<5	<5	<5		
MW-4A	50	<5	<5	<5	NS	NS	<5	NS	NS	<5	NS	<10	<10	25.4	<10	<10	NS	NS	<5	<5		
MW-5A	190	340	34	16	15	5	7	14	15	24	8	12.2	<10	<10	<10	<10	<4.5	6.7	5.8	<5		
MW-6A	190	15	8	<5	NS	NS	<5	NS	NS	10	NS	31.7	281	<10	<10	<10	NS	NS	NS	<5		
MW-7A	190	300	360	300	410	370	320	310	210	370	410	316	302	302	302	320	310	340	260	290		
MW-8A	190	<5	<5	6	NS	NS	8	NS	NS	7	NS	<10	<10	<10	<10	<10	NS	NS	NS	<5		
MW-9A	190	<5	<5	9	NS	NS	10	NS	NS	6	NS	<10	18.5	<10	<10	<10	NS	NS	NS	6.6		
MW-10A	190	8	7	12	NS	NS	15	NS	NS	13	NS	16.2	10.8	<10	11.3	11.5	13	13	10	11		
MW-11A	190	<5	<5	7	NS	NS	10	NS	NS	14	NS	20	12.6	<10	<10	<10	NS	NS	NS	6.5		
MW-12A	190	31	6	9	10	<5	5	8	8	14	17	<10	<10	<10	15.2	<10	10	8.8	6.2	5.4		
MW-13A	190	82	<5	12	NS	NS	11	NS	NS	6	NS	12.4	<10	12	<10	13.9	NS	NS	NS	9		
MW-14A	190	<5	18	15	NS	NS	18	NS	NS	16	NS	<10	18.1	34.6	16.8	25.3	NS	NS	NS	14		
MW-15A	190	8	76	110	55	55	15	49	7	<5	84	96.8	100	48.4	54.7	104	62	89	54	52		
MW-401	50	NS	<5	<5	NS	NS	<5	NS	NS	<5	NS	<10	<10	<10	<10	<10	<4.5	<5	<5	<5		
MW-402	50	NS	<5	<5	NS	NS	<5	NS	NS	<5	NS	<10	<10	23.4	<10	<10	NS	<5	<5	<5		
MW-404	50	<5	7	10	NS	NS	13	NS	NS	10	NS	<10	<10	<10	10.8	<10	11	11	8.7	<5		
MW-501	50	NS	<5	<5	NS	NS	<5	NS	NS	<5	NS	<10	<10	11.7	<10	NS	NS	NS	NS	NS		
MW-551	50	NS	NS	<5	NS	NS	<5	NS	NS	<5	NS	<10	<10	<10	<10	<10	<4.5	NS	NS	<5		
MW-552	50	NS	NS	<5	NS	NS	<5	NS	NS	<5	NS	<10	<10	<10	<10	<10	NS	NS	NS	<5		
MW-651	190	NS	<5	<5	NS	NS	<5	NS	NS	<5	NS	<10	<10	<10	<10	<10	<4.5	<5	<5	<5		
MW-702	50	NS	<5	<5	NS	NS	<5	NS	NS	<5	NS	<10	<10	12.7	<10	<10	NS	NS	NS	<5		
Interceptor Trench	190	NS	NS	14	NS	NS	18	NS	NS	14	NS	<10	11.4	12.7	11.4	<10	9	8	6.5	7.2		
JR Upstream	190	NS	10	14	NS	NS	5	NS	NS	10	NS	<10	<10	11.2	<10	11.4	14	9.4	11	9		
JR Downstrm	190	NS	69	13	NS	NS	6	NS	NS	10	NS	<10	<10	14	<10	10.7	11	8.9	10	9.4		
Sampling Periods		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20		

	pH FIELD PARAMETER											8/98	11/98	2/99	5/99	11/99	1/01	11/01	8/02	5-Yr Rvw
	Norm pH	May-97	Jul-97	4th Qtr-97	Nov-97	Dec-97	1st Qtr-98	Feb-98	Mar-98	2nd Qtr-98	May-98	Aug-98	4th Qtr-98	1st Qtr-99	2nd Qtr-99	4th Qtr-99	Ann-2000	Ann-2001	Ann-2002	2003
MW-1A		6.86	6.97	6.66			7.07			7.00		6.95	6.97	6.92	7.00	6.91	NS	7.02	DRY	DRY
MW-2A		6.90	7.09	6.64	7.09	7.09	7.10	7.28	7.03	7.14	7.12	7.20	6.92	7.11	7.20	7.03	NS	7.16	6.60	7.13
MW-3A		7.48	7.31	6.60			7.68			7.51		7.42	7.14	7.54	7.43	7.04	NS	7.14	6.80	7.18
MW-4A		7.06	7.14	6.47			7.24			7.23		7.14	6.79	7.13	7.05	7.14			6.84	7.16
MW-5A		7.01	6.78	6.99	7.20	7.23	7.18	7.15	7.18	7.26	7.18	7.04	6.91	6.99	7.06	7.13	6.82	6.87	6.59	7.07
MW-6A		7.05	6.94	6.72			7.25	7.22		7.23		7.09	6.86	7.02	7.08	7.01				7.12
MW-7A		7.11	7.00	6.79	7.24	8.25	7.29	7.21	7.11	7.09	7.13	7.20	6.84	7.24	7.10	7.14	7.01	7.04	7.02	7.18
MW-8A		7.10	6.88	6.90			7.13			7.14		7.16	6.88	7.11	7.14	7.10				7.23
MW-9A		7.04	6.99	6.84			7.13			7.00		7.14	6.87	7.05	7.15	7.06				7.13
MW-10A		7.09	6.88	6.76			7.15			7.04		7.15	6.88	7.06	7.22	7.13	6.85	7.01	6.96	7.11
MW-11A		7.16	7.03	6.82			7.96			7.12		7.22	7.24	7.02	7.37	7.12				7.20
MW-12A		7.22	6.94	6.87	7.22	7.20	7.23	6.93	7.13	6.79	7.25	7.22	7.31	7.10	6.76	7.22	7.26	7.12	7.04	7.14
MW-13A		7.08	6.91	6.89			7.29			7.08		7.16	7.24	7.10	7.15	7.02				7.14
MW-14A		7.19	6.92	6.88			7.39			7.18		7.15	7.25	7.22	7.20	7.50				7.15
MW-15A		7.39	7.11	7.06	7.34	8.41	7.30	7.27	7.39	7.30	7.32	7.27	7.33	7.35	7.23	7.29	7.40	7.19	7.19	7.3
MW-401			7.72	8.10			8.07			7.69		7.91		7.98	7.53	7.95	NS	7.66	7.15	7.72
MW-402			7.25	7.15			7.03			7.12		7.09	7.14	7.25	7.18	7.03		7.18	6.58	7.17
MW-404			7.00	7.02			7.25			7.31		7.29	7.40	7.37	7.33	7.34	NS	7.19	6.90	7.43
MW-501			7.85	7.21			7.15			7.22		7.14	7.39	7.20	7.18					
MW-551				7.36			7.24			7.24		7.28		7.30	7.26	-	NS			7.2
MW-552				7.20			7.14			7.09		7.01	7.23	7.17	7.20	-				7.01
MW-651			7.59	7.50			7.47			7.26		7.26	7.33	7.30	7.35	7.29	NS	7.56	7.31	7.57
MW-702			7.01	7.15			7.12			7.20		7.04	7.19	7.16	7.04	7.14				6.96
Interceptor Trench				7.40			7.50			7.25		7.17	7.23	7.49	7.17	7.13	NS	7.14	7.01	6.92
JR Upstream			7.71	7.95			NS			8.04		7.94	7.49	7.56	7.33	-	NS	8.10	7.01	7.9
JR Downstrm			7.44	7.90			8.38			8.08		7.91	8.23	7.50	7.38	-	NS	8.15	7.10	8.08
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

	TEMPERATURE FIELD PARAMETER in Degrees Centigrade												8/98	11/98	2/99	5/99	11/99	1/01	11/01	8/02	5-Yr Rvw
	Temp C	May-97	Jul-97	4th Qtr-97	Nov-97	Dec-97	1st Qtr-98	Feb-98	Mar-98	2nd Qtr-98	May-98	Aug-98	4th Qtr-98	1st Qtr-99	2nd Qtr-99	4th Qtr-99	Ann-2000	Ann-2001	Ann-2002	2003	
MW-1A		16.0	15.0	14.0			13.5			12.7		15.1	13.5	12.8	13.5	14.7	13.80	15.0	DRY	DRY	
MW-2A		16.0	16.0	15.0	13.8	12.7	12.1	11.4	11.0	11.8	13.7	17.2	13.7	12.3	13.8	17.7	13.50	16.9	17.6	17.6	
MW-3A		16.0	18.0	15.0			9.2			11.0		20.7	13.6	9.5	13.5	16.4	10.00	17.2	20.5	21.1	
MW-4A		16.0	17.0	16.0			11.4			12.3		17.2	16.0	11.9	13.2	16.5			18.9	20.00	
MW-5A		15.0	18.0	17.0	12.9	10.6	6.5	8.5	9.2	11.5	14.1	18.7	16.4	9.6	11.8	14.9	15.60	17.2	21.3	20.9	
MW-6A		14.0	17.0	17.0			9.9	9.8		11.6		18.1	15.2	10.3	12.3	15.9				21.03	
MW-7A		17.0	16.0	16.0	13.4	13.3	13.6	12.2	13.3	14.6	15.0	17.2	14.6	12.7	14.4	15.6	18.00	17.3	18.6	19.3	
MW-8A		15.0	16.0	16.0			12.2			12.9		17.2	15.5	11.5	12.7	16.5				17.8	
MW-9A		15.0	16.0	16.0			11.7			11.6		16.2	15.7	11.4	12.7	14.8				18.3	
MW-10A		15.0	15.0	17.0			12.4			11.6		15.7	15.8	12.2	12.3	15.1	18.10	16.3	18.8	18.9	
MW-11A		15.0	15.0	17.0			13.0			12.8		15.4	14.9	13.2	13.9	14.7				17.2	
MW-12A		14.0	16.0	17.0	13.8	12.8	11.9	9.6	10.0	11.8	13.7	16.7	14.0	11.2	12.6	15.5	12.80	16.5	18.3	19.3	
MW-13A		15.0	15.0	17.0			13.6			13.1		16.0	15.1	12.0	13.0	13.4				17.5	
MW-14A		14.0	15.0	16.0			13.5			13.9		16.1	13.5	10.4	12.9	14.2				17.2	
MW-15A		13.0	15.0	17.0	13.9	13.7	12.5	11.7	10.8	12.9	13.2	16.2	15.0	10.7	12.0	13.9	14.60	17.9	19.4	18.73	
MW-401			18.0	16.0			15.1			20.0		21.7		15.9	17.3	14.9	16.00	16.7	18.3	17.3	
MW-402			16.0	15.3			13.9			14.7		15.7	14.0	14.1	13.3	14.5		15.0	16.3	17.2	
MW-404		NS	19.0	15.0			14.3			13.8		15.0	14.0	14.0	12.5	14.6	14.90	15.4	16.0	16.4	
MW-501			17.0	13.9			12.2			7.22		16.2	14.8	14.8	15.2						
MW-551				15.0			15.0			17.1		16.9		14.7	16.7	-	15.70			17.4	
MW-552				13.9			12.9			14.9		16.4	14.2	12.3	16.1	-				18.4	
MW-651			17.0	14.7			14.6			17.2		18.1	15.3	14.4	16.1	15.5	18.10	15.3	18.0	17.8	
MW-702			16.0	15.3			14.9			16.0		16.6	15.1	15.9	17.8	14.0				16.5	
Interceptor Trench				14.0			14.2			14.4		21.3	15.3	13.0	14.4	12.2	10.5	16.2	20.0	18	
JR Upstream			21.7	10.0			2.5			13.7		27.1	7.6	8.0	17.4	-	5.5	13.1	19.0	18.6	
JR Downsum			22.3	10.0			6.0			14.0		24.4	7.9	6.8	16.2	-	4.6	12.5	20.0	15	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	

SPECIFIC CONDUCTIVITY FIELD PARAMETER																				8/98	11/98	2/99	5/99	11/99	1/01	11/01	8/02	5-Yr Rvw
	Sp. Cond.	May-97	Jul-97	4th Qtr-97	Nov-97	Dec-97	1st Qtr-98	Feb-98	Mar-98	2nd Qtr-98	May-98	Aug-98	4th Qtr-98	1st Qtr-99	2nd Qtr-99	4th Qtr-99	Ann-2000	Ann-2001	Ann-2002	2003								
MW-1A		NR	4.64	4.86			4.05			4.13		5.77	5.01	4.94	5.06	3.10	2.67	5.07	DRY	DRY								
MW-2A		NR	2.23	2.17	1.80	2.12	2.14	2.21	2.17	2.20	1.89	2.12	2.37	2.42	2.29	1.25	1.25	2.28	1.98	2.36								
MW-3A		NR	1.59	2.03			1.25			1.26		1.77	1.65	1.61	1.48	1.25	1.07	2.42	2.36	2.51								
MW-4A		NR	2.27	2.30			1.96			1.80		2.05	2.23	2.23	2.09	1.21			2.42	2.35								
MW-5A		NR	2.68	2.52	1.90	1.95	1.96	2.01	1.96	1.82	2.02	2.27	2.40	2.36	1.15	1.39	1.36	2.16	2.41	2.11								
MW-6A		NR	2.30	2.40			2.01	2.11		2.17		2.33	2.24	2.37	2.38	1.40				2.22								
MW-7A		NR	2.58	2.60	2.13	2.07	2.19	2.31	2.28	2.36	2.24	2.32	2.36	2.30	2.65	1.43	1.44	2.18	2.51	2.31								
MW-8A		NR	2.47	2.41			1.75			2.10		2.23	2.24	2.36	2.41	1.41				2.44								
MW-9A		NR	2.61	2.45			1.89			2.18		2.22	2.27	2.48	2.26	1.50				1.84								
MW-10A		NR	2.96	2.88			2.36			2.59		2.79	2.58	2.60	3.11	1.69	1.48	2.72	2.78	2.23								
MW-11A		NR	2.58	2.58			1.94			2.32		2.48	2.54	2.50	2.58	1.57				1.93								
MW-12A		NR	2.33	2.18	1.73	1.90	2.01	2.21	2.15	1.99	1.99	2.30	2.17	2.13	2.48	1.38	1.24	1.97	1.83	1.66								
MW-13A		NR	2.28	2.37			2.02			2.01		2.29	2.24	2.35	1.83	1.27				1.91								
MW-14A		NR	2.53	2.28			1.98			2.01		2.28	2.10	2.17	2.22	0.10				1.86								
MW-15A		NR	2.69	2.63	2.10	2.15	1.90	2.27	2.28	2.12	2.11	2.61	2.42	2.51	2.43	1.42	1.17	2.11	2.20	2.16								
MW-401			0.36	0.37			0.32			0.28		0.36		0.51	0.38	0.22	0.23	0.39	0.40	0.44								
MW-402			2.48	2.60			2.21			1.70		2.44	2.61	2.41	1.39	-		2.91	2.73	2.66								
MW-404		NR	1.97	1.97			1.68			1.51		1.80	2.05	1.94	1.18	-	1.08	1.85	1.67	1.73								
MW-501			1.79	1.91			0.14			1.65		1.86	1.89	1.91	1.81													
MW-551				1.56			1.22			1.28		1.42		1.46	1.61	-	0.95			1.8								
MW-552				1.91			1.40			1.61		2.02	2.05	1.84	1.94	-				2.2								
MW-651			1.15	1.15			0.92			0.97		1.12	1.14	1.06	1.07	-	0.67	1.22	1.17	1.17								
MW-702			2.22	2.16			1.60			1.74		2.24	2.18	2.13	2.04	1.23				2.46								
Interceptor Trench				2.73			2.20			2.52		2.77	2.81	2.92	2.91	1.60	1.66	2.7	2.41	2.49								
JR Upstream			1.48	1.49			1.08			1.06		1.68	1.08	1.16	1.16	-	1.30	2.15	1.97	2.02								
JR Downstirn			1.48	1.49			1.20			1.10		1.42	1.29	1.04	1.20	-	1.27	2.14	2.08	2.31								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19								
NR = No Reading Taken																												

TURBIDITY FIELD PARAMETER																				
	Turbidity	May-97	Jul-97	4th Qtr-97	Nov-97	Dec-97	1st Qtr-98	Feb-98	Mar-98	2nd Qtr-98	May-98	Aug-98	4th Qtr-98	1st Qtr-99	2nd Qtr-99	4th Qtr-99	Ann-2000	Ann-2001	Ann-2002	2003
MW-1A		NR	2.4	4.5			4.1			6.82		0.49	1.31	24.70	3.04	11.00	3.98	11.10	DRY	DRY
MW-2A		NR	7.5	10.0	2.6	3.7	3.0	NR	0.33	0.43	0.34	0.62	0.44	0.76	1.64	0.76	0.47	1.76	1.98	3.64
MW-3A		NR	2.6	5.2			3.3			0.16		0.42	0.65	0.99	0.82	0.62	0.43	0.93	0.86	0.33
MW-4A		NR	5.5	9.0			2.2			0.19		0.58	0.41	0.51	0.93	0.58			1.43	0.75
MW-5A		NR	NR	28.0	14.0	52.0	2.1	5.7	2.17	0.61	0.49	0.56	0.94	5.17	1.15	2.07	1.40	1.83	1.40	1.96
MW-6A		NR	4.8	2.8			1.2	1.5		0.19		0.29	0.33	0.46	0.47	0.55				3.86
MW-7A		NR	3.5	1.8	3.7	14.0	2.5	1.4	0.44	0.69	0.67	0.85	0.56	0.84	0.49	0.49	0.73	0.83	0.90	0.27
MW-8A		NR	5.0	1.9			3.9			0.33		0.72	0.50	0.43	0.41	0.82				0.77
MW-9A		NR	4.0	1.8			2.9			0.29		0.63	0.33	0.50	0.47	0.52				0.48
MW-10A		NR	2.9	1.0			1.2			0.18		0.76	0.47	0.51	0.59	0.70	0.17	0.69	0.90	0.25
MW-11A		NR	2.3	0.9			1.4			0.15		0.65	0.27	0.49	0.35	0.63				0.35
MW-12A		NR	5.6	1.9	2.4	4.5	12.0	68.0	39.5	27.70	21.70	4.66	1.83	4.28	10.9	0.79	1.25	0.95	1.40	0.34
MW-13A		NR	2.8	1.5			2.5			0.34		0.87	0.86	0.33	0.80	1.04				0.22
MW-14A		NR	12.0	1.6			4.5			0.74		18.40	1.98	5.40	262.0	1.41				7.88
MW-15A		NR	18.0	2.1	19.0	38.0	21.0	NR	25.5	42.90	23.50	2.03	2.76	110.0	48.4	3.80	11.50	9.17	4.00	15.7
MW-401			NG	1.3			1.0			0.28		0.70		0.37	0.49	0.64	0.27	0.72	0.92	0.37
MW-402			2.3	1.4			3.1			1.07		0.72	0.32	0.45	0.65	0.85		0.88	1.05	0.25
MW-404		NR	11.0	2.9			4.2			33.30		7.88	11.8	4.19	2.39	3.12	2.86	6.74	2.21	2.19
MW-501			3.4	1.6			2.5			0.30		0.53	0.53	0.60	0.85					
MW-551				5.8			2.3			0.45		0.68		0.43	0.67	-	0.26			0.69
MW-552				1.2			2.1			0.19		0.85	0.48	0.39	0.85	-				0.31
MW-651			2.9	2.2			2.2			0.75		0.96	0.32	0.43	0.66	0.55	0.67	1.09	1.16	0.36
MW-702			2.8	2.5			3.5			0.35		0.48	0.37	0.58	0.33	0.67				0.29
Interceptor Trench				1.4			2.5			0.39		1.21	0.32	2.12	1.43	3.13	0.70	3.66	0.93	0.31
JR Upstream			64.0	NR			45.0			132.00		90.7	54.8	68.2	77.0	-	10.10	9.77	13.90	6.89
JR Downstrm			71.0	NR			52.0			119.00		75.2	57.1	63.5	63.1	-	6.37	9.02	15.10	9.35
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		NR = No Reading Taken																		
		NG = Reading No Good																		

WATER ELEVATION IN THE WELLS												8/98	11/98	2/99	5/99	11/99	1/01	11/01	8/02	5-Yr Rvw
	Well Level	May-97	Jul-97	4th Qtr-97	Nov-97	Dec-97	1st Qtr-98	Feb-98	Mar-98	2nd Qtr-98	May-98	Aug-98	4th Qtr-98	1st Qtr-99	2nd Qtr-99	4th Qtr-99	Ann-2000	Ann-2001	Ann-2002	2003
MW-1A		4284.42	4282.37	4283.32			4285.27			4285.95		4281.73	4282.77	4285.94	4285.47	4281.72	4281.88	4280.19	Well dry	Well dry
MW-2A		4283.48	4281.45	4283.30	4283.76	4283.92	4284.25	4284.70	4285.00	4285.10	4284.09	4281.55	4285.00	4284.90	4284.25	4280.90	4280.85	4279.53	4278.5	4279.00
MW-3A		4282.78	4281.19	4282.55			4283.38			4284.30		4281.52	4280.40	4283.10	4283.33	4280.04	4280.2	4279.16	4278.65	4278.95
MW-4A		4282.15	4280.81	4282.10			4282.67			4283.54		4281.35	4280.29	4283.10	4282.38	4279.15			4278.7	4278.7
MW-5A		4282.27	4281.04	4282.22	4282.31	4282.30	4282.77	4283.32	4283.65	4283.58	4284.79	4281.75	4280.15	4282.92	4282.52	4279.37	4279.22	4279.02	4279.07	4279.02
MW-6A		4282.85	4281.61	4282.84			4283.22			4284.07		4282.34	4280.47	4283.52	4282.97	4280.22				4272.85
MW-7A		4283.33	4282.09	4283.29	4283.29	4283.29	4283.69	4284.18	4284.54	4284.54	4283.72	4282.71	4281.14	4283.90	4283.44	4280.64	4280.75	4280.56	4280.49	4280.4
MW-8A		4283.72	4282.42	4283.72			4284.17			4284.87		4283.10	4281.37	4284.67	4283.82	4280.97				4280.7
MW-9A		4284.11	4282.79	4284.14			4284.47			4285.24		4283.44	4281.75	4284.79	4284.29	4281.59				4280.65
MW-10A		4284.42	4283.17	4284.51			4284.89			4285.62		4283.83	4281.89	4285.35	4284.60	4281.25	4281.2	4281.05	4281.5	4280.9
MW-11A		4284.91	4283.77	4285.01			4285.28			4286.21		4284.37	4285.51	4285.61	4285.06	4281.26				4281.4
MW-12A		4285.29	4284.10	4285.34	4285.20	4285.24	4285.55	4286.10	4286.50	4286.55	4286.07	4284.76	4288.75	4286.05	4286.10	4282.20	4282.05	4281.92	4282.42	4282.2
MW-13A		4285.68	4284.63	4285.75			4286.02			4286.94		4285.20	4289.25	4286.47	4285.55	4282.75				4282.7
MW-14A		4285.92	4284.921	4286.08			4286.35			4287.15		4285.55	4286.32	4286.63	4285.91	4283.20				4283
MW-15A		4286.19	4285.15	4286.25	4286.20	4286.21	4286.55	4287.05	4287.30	4287.39	4286.77	4285.71	4286.70	4286.85	4286.02	4283.45	4283.3	4283.13	4283.45	4283.3
MW-401			4279.44	4292.62			4292.02			4292.64		4277.66		4294.25	4293.85	4288.85	4289.4	4283.92	4272.72	4280.12
MW-402			4283.82	4289.25			4290.05			4290.50		4283.60	4289.60	4291.09	4290.85	4286.35		4283.58	4279.23	4282.13
MW-404			4335.93				4334.63			4337.46		4337.66	4336.26	4234.81	4234.78	4334.26	4332.34	4330.84	4330.86	4328.56
MW-501			4287.58	4290.80			4291.18			4291.54		4288.45		4291.07	4290.72					
MW-551				4290.79			4291.06			4291.40		4289.84		4292.19	4290.68	4287.86	4287.64			4286.9
MW-552				4290.89			4291.17			4291.53		4289.95		4291.35	4290.70	4288.02				4286.9
MW-651			4289.88	2.3 psi			2.7 psi			2.1 psi		4294.22		2.5 psi	2.5 psi	2.5 psi	2.5 psi	4291.56	4285.07	4289.42
MW-702			4290.72	4292.49			4292.99			4292.83		4291.49		4289.81	4292.38	4289.94				4288.99
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

	RIVER ELEVATIONS											8/98	11/98	2/99	5/99	11/99		11/01	8/02	5-Yr Rvw
	River Lvl	May-97	Jul-97	4th Qtr-97	Nov-97	Dec-97	1st Qtr-98	Feb-98	Mar-98	2nd Qtr-98	May-98	Aug-98	4th Qtr-98	1st Qtr-99	2nd Qtr-99	4th Qtr-99	Ann-2000	Ann-2001	Ann-2002	2003
MW-5A												4281.7				4279.10	4279.0	4278.9	4278.9	4279.2
MW-6A												4282.4				4280.22				4279.4
MW-7A												4282.6				4280.5	4280.3	4280.1	4279.9	4280.4
MW-8A												4282.9				4280.5				4280.2
MW-9A												4283.0				4280.5				4280.3
MW-10A												4283.3				4280.6	4280.6	4280.3	4280.8	4280.3
MW-11A												4283.5				4280.7				4280.4
MW-12A												4283.9				4281.6	4281.55	4281.4	4281.6	4281.5
MW-13A												4284.5								4282.3
MW-14A												4284.8								4282.4
MW-15A												4285.2					4282.7	4282.6	4283.0	4282.7
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

Attachment 4
Site Inspection Form

I. SITE INFORMATION			
Site name: Sharon Steel Superfund Site		Date of inspection: May 21, 2004	
Location and Region: Midvale, UT/EPA Region VIII		EPA ID: UTD980951388	
Agency, office, or company leading the five-year review: Utah Department of Environmental Quality		Weather/temperature: Partly cloudy/low 80s	
Remedy Includes: (Check all that apply) <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Monitored natural attenuation <input checked="" type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls <input checked="" type="checkbox"/> Other <u>Groundwater monitoring</u> 			
Attachments: <input type="checkbox"/> Inspection team roster attached <input checked="" type="checkbox"/> Site map attached			
II. INTERVIEWS (Check all that apply)			
1. O&M site manager <u>Elizabeth Yeomans</u> <u>Environmental Scientist</u> <u>06-30-04</u> <div style="display: flex; justify-content: space-between;"> Name Title Date </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. <u>801/536-4100</u> Problems, suggestions; <input type="checkbox"/> Report attached _____			
2. O&M staff _____ <div style="display: flex; justify-content: space-between;"> Name Title Date </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____			
3. Local regulatory authorities and response agencies (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply. Agency <u>Midvale City</u> Contact <u>Christine Richman</u> <u>Community & Economic Dev. Director</u> <u>801/567-7214</u> <div style="display: flex; justify-content: space-between;"> Name Title Date Phone no. </div> Problems; suggestions; <input type="checkbox"/> Report attached _____ Agency <u>U.S. Bureau of Reclamation</u> Contact <u>Rick Scott</u> _____ <u>801/ 379-1265</u> <div style="display: flex; justify-content: space-between;"> Name Title Date Phone no. </div> Problems; suggestions; <input checked="" type="checkbox"/> Report attached Attachment 6 – Interview Records _____			

[illegible]

5.	Gas Generation Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks _____				
6.	Settlement Monument Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks _____				
7.	Groundwater Monitoring Records	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
Remarks <u>Groundwater monitoring records are maintained off-site by UDEQ and EPA in their respective offices.</u>				
8.	Leachate Extraction Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks _____				
9.	Discharge Compliance Records			
	<input type="checkbox"/> Air	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Water (effluent)	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks _____				
10.	Daily Access/Security Logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks _____				
IV. O&M COSTS				
1.	O&M Organization			
	<input type="checkbox"/> State in-house	<input type="checkbox"/> Contractor for State		
	<input type="checkbox"/> PRP in-house	<input type="checkbox"/> Contractor for PRP		
	<input type="checkbox"/> Federal Facility in-house	<input type="checkbox"/> Contractor for Federal Facility		
	<input checked="" type="checkbox"/> Other <u>State Lead through a Cooperative Agreement with EPA Region VIII</u>			

2.	O&M Cost Records			
	<input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date			
	<input checked="" type="checkbox"/> Funding mechanism/agreement in place			
	Original O&M cost estimate <u>\$230,000 if not pumping & treating GW</u> <input checked="" type="checkbox"/> Breakdown attached			
	Total annual cost by year for review period if available			
	From <u>7-1-99</u>	To <u>6-30-00</u>	<u>\$13,683.08</u>	<input checked="" type="checkbox"/> Breakdown attached
	Date	Date	Total cost	
	From <u>7-1-00</u>	To <u>6-30-01</u>	<u>\$85,074.77</u>	<input checked="" type="checkbox"/> Breakdown attached
	Date	Date	Total cost	
	From <u>7-1-01</u>	To <u>6-30-02</u>	<u>\$75,978.70</u>	<input checked="" type="checkbox"/> Breakdown attached
	Date	Date	Total cost	
	From <u>7-1-02</u>	To <u>6-30-03</u>	<u>\$67,742.61</u>	<input checked="" type="checkbox"/> Breakdown attached
	Date	Date	Total cost	
	From <u>7-1-03</u>	To <u>4-30-04</u>	<u>\$63,121.81</u>	<input checked="" type="checkbox"/> Breakdown attached
	Date	Date	Total cost	
3.	Unanticipated or Unusually High O&M Costs During Review Period			
Describe costs and reasons: <u>None.</u>				

<div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div> <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div> <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div> <div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div>				
V. ACCESS AND INSTITUTIONAL CONTROLS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A				
A. Fencing				
1.	Fencing damaged Remarks _____ _____ Quarterly Site Inspections monitor the fences and gates for damage. _____	<input checked="" type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Gates secured <input type="checkbox"/> N/A		
B. Other Access Restrictions				
1.	Signs and other security measures Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> N/A		
C. Institutional Controls (ICs)				
1.	Implementation and enforcement Site conditions imply ICs not properly implemented <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A Site conditions imply ICs not being fully enforced <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A Type of monitoring (e.g., self-reporting, drive by) _____ Frequency _____ Responsible party/agency _____ Contact _____			
	Name	Title	Date	Phone no.
	Reporting is up-to-date <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Reports are verified by the lead agency <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Specific requirements in deed or decision documents have been met <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Violations have been reported <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A Other problems or suggestions: <input type="checkbox"/> Report attached			
2.	Adequacy Remarks _____	<input checked="" type="checkbox"/> ICs are adequate <input type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A		
D. General				
1.	Vandalism/trespassing <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No vandalism evident Remarks <u>None evident, although trespassing is known to occur because of footprints in the snow and trash strewn on the site. Site is sometimes accessible through holes in outer fence near low-rent apartments.</u>			
2.	Land use changes on site <input type="checkbox"/> N/A Remarks <u>The City of Midvale has adopted an easement on site for the Jordan River Parkway Trail, a public recreational trail along the Jordan River used for walking and biking. More than several cities have adopted easements to support segments of this trail along the entire length of the Jordan River from Utah Lake to the Great Salt Lake. New property owner Jordan Bluffs Inc. is set to redevelop the site as outlined in their Site Modification Plan for Redevelopment and the EPA's Explanation of Significant Differences regarding redevelopment.</u>			

3.	Land use changes off site <input checked="" type="checkbox"/> N/A Remarks _____ _____
VI. GENERAL SITE CONDITIONS	
A. Roads <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A	
1.	Roads damaged <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Roads adequate <input type="checkbox"/> N/A Remarks _____ _____
B. Other Site Conditions	
Remarks _____ _____ _____	
VII. LANDFILL COVERS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A	
A. Landfill Surface	
1.	Settlement (Low spots) <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Settlement not evident Areal extent _____ Depth _____ Remarks _____ _____
2.	Cracks <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Cracking not evident Lengths _____ Widths _____ Depths _____ Remarks _____ _____
3.	Erosion <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Erosion not evident Areal extent _____ Depth _____ Remarks _____ _____
4.	Holes <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Holes not evident Areal extent _____ Depth _____ Remarks _____ _____
5.	Vegetative Cover <input checked="" type="checkbox"/> Grass <input checked="" type="checkbox"/> Cover properly established <input checked="" type="checkbox"/> No signs of stress <input type="checkbox"/> Trees/Shrubs (indicate size and locations on a diagram) Remarks _____ _____

6.	Alternative Cover (armored rock, concrete, etc.) <input type="checkbox"/> N/A Remarks _____ _____
7.	<div style="display: flex; justify-content: space-between;"> <div> Bulges Areal extent _____ Height _____ Remarks _____ _____ </div> <div> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Height _____ </div> <div> <input checked="" type="checkbox"/> Bulges not evident </div> </div>
8.	<div style="display: flex; justify-content: space-between;"> <div> Wet Areas/Water Damage <input type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks _____ _____ </div> <div> <input checked="" type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map </div> <div> Areal extent _____ Areal extent _____ Areal extent _____ Areal extent _____ </div> </div>
9.	<div style="display: flex; justify-content: space-between;"> <div> Slope Instability Areal extent _____ Remarks _____ _____ </div> <div> <input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map </div> <div> <input checked="" type="checkbox"/> No evidence of slope instability </div> </div>
B. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)	
1.	<div style="display: flex; justify-content: space-between;"> <div> Flows Bypass Bench Remarks _____ _____ </div> <div> <input type="checkbox"/> Location shown on site map </div> <div> <input checked="" type="checkbox"/> N/A or okay </div> </div>
2.	<div style="display: flex; justify-content: space-between;"> <div> Bench Breached Remarks _____ _____ </div> <div> <input type="checkbox"/> Location shown on site map </div> <div> <input checked="" type="checkbox"/> N/A or okay </div> </div>

3.	Bench Overtopped Remarks _____ _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A or okay
C. Letdown Channels <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	Settlement Areal extent _____ Depth _____ Remarks _____ _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of settlement
2.	Material Degradation Material type _____ Areal extent _____ Remarks _____ _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of degradation
3.	Erosion Areal extent _____ Depth _____ Remarks _____ _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of erosion
4.	Undercutting Areal extent _____ Depth _____ Remarks _____ _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of undercutting
5.	Obstructions Type _____ <input type="checkbox"/> Location shown on site map Areal extent _____ Size _____ Remarks _____ _____		<input checked="" type="checkbox"/> No obstructions
6.	Excessive Vegetative Growth Type _____ <input checked="" type="checkbox"/> No evidence of excessive growth <input checked="" type="checkbox"/> Vegetation in channels does not obstruct flow <input type="checkbox"/> Location shown on site map Areal extent _____ Remarks _____ _____		
D. Cover Penetrations <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
1.	Gas Vents <input type="checkbox"/> Active <input type="checkbox"/> Passive <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____ _____		

2.	Gas Monitoring Probes <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____ _____
3.	Monitoring Wells (within surface area of landfill) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____ _____
4.	Leachate Extraction Wells <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____ _____
5.	Settlement Monuments <input type="checkbox"/> Located <input type="checkbox"/> Routinely surveyed <input checked="" type="checkbox"/> N/A Remarks _____ _____
E. Gas Collection and Treatment <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1.	Gas Treatment Facilities <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
2.	Gas Collection Wells, Manifolds and Piping <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____
F. Cover Drainage Layer <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A	
1.	Outlet Pipes Inspected <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____ _____
2.	Outlet Rock Inspected <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____ _____
G. Detention/Sedimentation Ponds <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1.	Siltation Areal extent _____ Depth _____ <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Siltation not evident Remarks _____ _____
2.	Erosion Areal extent _____ Depth _____

	<input type="checkbox"/> Erosion not evident	Remarks _____
3.	Outlet Works <input type="checkbox"/> Functioning <input type="checkbox"/> N/A	Remarks _____
4.	Dam <input type="checkbox"/> Functioning <input type="checkbox"/> N/A	Remarks _____
H. Retaining Walls <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	Deformations <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Deformation not evident	Horizontal displacement _____ Vertical displacement _____ Rotational displacement _____ Remarks _____
2.	Degradation <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Degradation not evident	Remarks _____
I. Perimeter Ditches/Off-Site Discharge <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1.	Siltation <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Siltation not evident	Areal extent _____ Depth _____ Remarks _____
2.	Vegetative Growth <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Vegetation does not impede flow	Areal extent _____ Type _____ Remarks _____ Vegetation is routinely cleared out of the interceptor trench and the drainage ditches.
3.	Erosion <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Erosion not evident	Areal extent _____ Depth _____ Remarks _____
4.	Discharge Structure <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> N/A	Remarks _____
VIII. VERTICAL BARRIER WALLS <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	Settlement <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Settlement not evident	Areal extent _____ Depth _____ Remarks _____
2.	Performance Monitoring Type of monitoring _____ <input type="checkbox"/> Performance not monitored	Frequency _____ <input type="checkbox"/> Evidence of breaching Head differential _____ Remarks _____

IX. GROUNDWATER/SURFACE WATER REMEDIES		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Pumps, Wellhead Plumbing, and Electrical <input checked="" type="checkbox"/> Good condition <input checked="" type="checkbox"/> All required wells properly operating <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks <u>Extraction conducted only for annual groundwater monitoring sampling. No pump and treatment technology has been utilized in the past 5 years.</u>		
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks <u>Not extracting.</u>		
3.	Spare Parts and Equipment <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____		
B. Surface Water Collection Structures, Pumps, and Pipelines		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Collection Structures, Pumps, and Electrical <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks <u>Surface Water collection is performed in the Jordan River from public bridges.</u>		
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____		
3.	Spare Parts and Equipment <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____		
C. Treatment System		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Treatment Train (Check components that apply) <input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Filters <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) <input type="checkbox"/> Others <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually _____ <input type="checkbox"/> Quantity of surface water treated annually _____ Remarks _____		
2.	Electrical Enclosures and Panels (properly rated and functional) <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____		

3.	Tanks, Vaults, Storage Vessels <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks _____
4.	Discharge Structure and Appurtenances <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____
5.	Treatment Building(s) <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks _____
6.	Monitoring Wells (pump and treatment remedy) <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input checked="" type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____
D. Monitoring Data	
1.	Monitoring Data <input type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality
2.	Monitoring data suggests: <input checked="" type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining
D. Monitored Natural Attenuation	
1.	Monitoring Wells (natural attenuation remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____
X. OTHER REMEDIES	
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.	
XI. OVERALL OBSERVATIONS	
A.	Implementation of the Remedy Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). <u>Nothing is evident from the site inspection to indicate that the remedy is not currently functioning as designed. The remedy is effective.</u>
B.	Adequacy of O&M

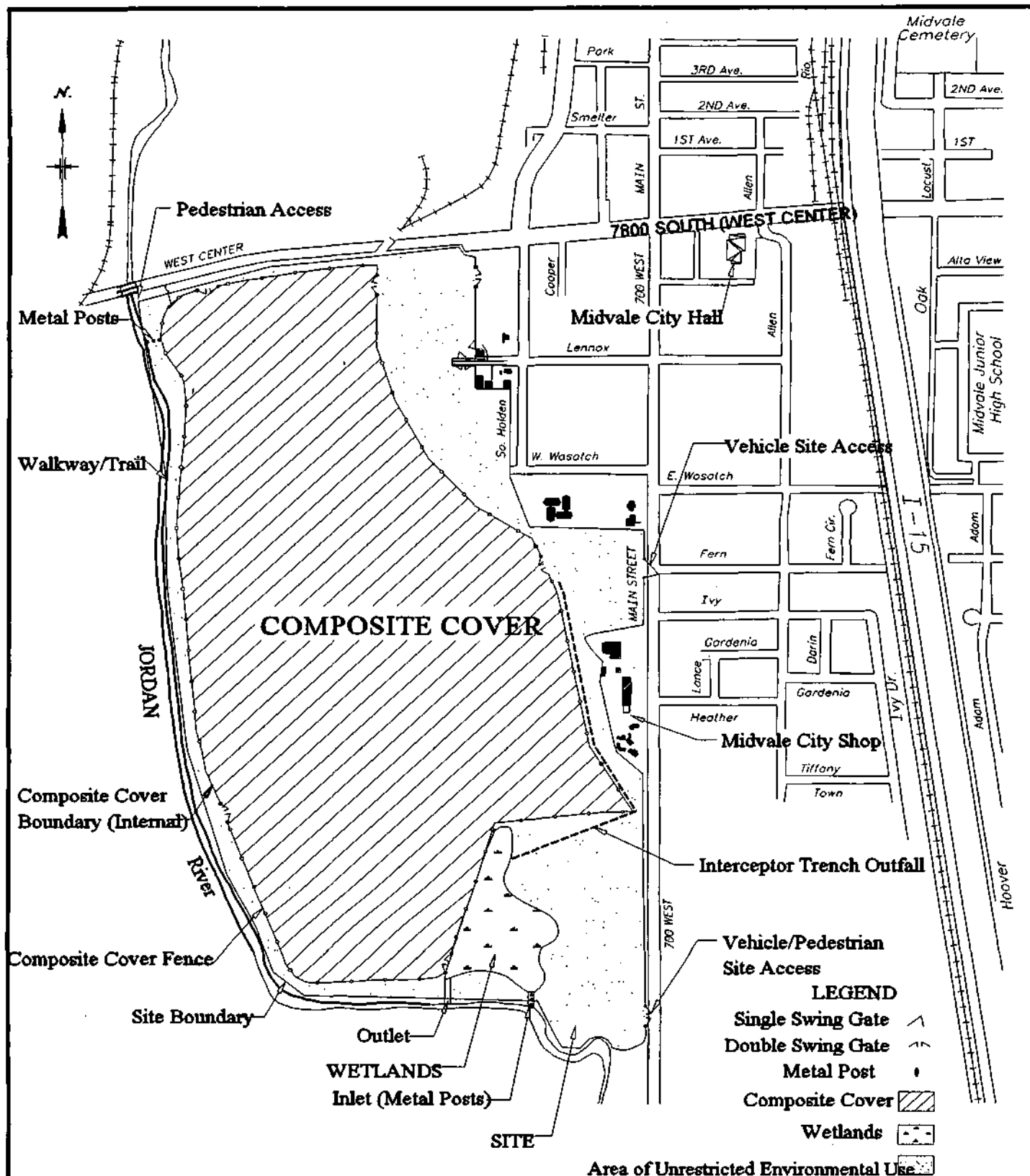
Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.



SHARON STEEL OPERABLE UNIT NO. 1 SITE MAP

NOT TO SCALE

**FINAL
DECLARATION FOR THE RECORD OF DECISION**

Sharon Steel (Operable Unit 01)
Sharon Steel/Midvale Tailings Site
Midvale, Utah

DECEMBER 1993

U.S. Environmental Protection Agency Region VIII
Utah Department of Environmental Quality

Document Control No. 7760-019-DD-CXZM

O+M (costs ⇒
(Estimated))

COST ESTIMATES FOR THE OUI SELECTED REMEDY

PROJECT: SHARON STEEL/MIDVALE TAILINGS SITE (OUI)

ALTERNATIVE 4: CAPPING

							PRESENT WORTH		Discount Rate = 9.0%
DIRECT ANNUAL/PERIODIC COSTS							ANNUAL COSTS	PERIODIC COSTS	
COST COMPONENT	UNIT	FREQUENCY	QUANTITY (PER YEAR)	UNIT COST	DIRECT ANNUAL COST	LIFE OF ITEM (YEARS)			
DIRECT ANNUAL/PERIODIC COSTS									
1 Cap									
a. Inspection	EA	ANNUAL	1	\$2,000	\$2,000	30	\$21,000	n/a	
b. Mowing & Revegetation	EA	ANNUAL	1	\$63,500	\$63,500	30	\$652,000	n/a	
c. Cap Repair & Maintenance	EA	ANNUAL	1	\$10,000	\$10,000	30	\$103,000	n/a	
2. Groundwater									
a. Replace Groundwater Extraction Wells	EA	ONE EVERY YEAR	1	\$18,000	\$18,000	30	\$185,000	n/a	
b. Well O&M	LS	ANNUAL	1	\$40,000	\$40,000	30	\$411,000	n/a	
c. Treatment Plant O & M	LS	ANNUAL	1	\$88,500	\$88,500	30	\$909,000	n/a	
d. Replace Treatment Plant	EA	EVERY 10 YEARS	n/a	\$885,000	n/a	10	n/a	\$532,000	
e. Pumping/Discharge to Jordan O&M	LS	ANNUAL	1	\$55,100	\$55,100	30	\$566,000	n/a	
TOTAL DIRECT ANNUAL COSTS:					\$277,000				
TOTAL PRESENT WORTH OF DIRECT COSTS:							\$2,847,000		
TOTAL PRESENT WORTH OF DIRECT PERIODIC COSTS:								\$532,000	
TOTAL PRESENT WORTH OF DIRECT ANNUAL/PERIODIC COSTS:								\$3,379,000	
INDIRECT ANNUAL/PERIODIC COSTS (Percentage of Total Direct Annual Costs):									
Administration (10%)	LS	ANNUAL	1		\$27,700	30	\$285,000	n/a	
Maintenance Reserve & Contingency Costs (25%)	LS	ANNUAL	1		\$69,300	30	\$712,000	n/a	
TOTAL PRESENT WORTH OF INDIRECT ANNUAL/PERIODIC COSTS:					\$374,000			\$997,000	
TOTAL PRESENT WORTH (Capital & Annual/Periodic) COSTS:								\$53,936,000	
TOTAL PRESENT WORTH COSTS PER ACRE (BASED UPON 270 ACRES)								\$199,763	

Contracts
for 4802
(BOR)

IC_YEAR	MO	XORGAN	FUND	OBJECT	DOLLAR_AM	UNT	ING_CA	Month	VENDOR_PROVIDER_NAME
2001	11	4804802	100	6137	\$27,285.75	22	8AV0	May	ZIONS FIRST NATIONAL BANK
2001	13	4804802	100	6137	\$42.39	22	8AV0	July - Old	ZIONS FIRST NATIONAL BANK
2002	02	4804802	100	6137	\$9,937.15	22	8AV0	August	ZIONS FIRST NATIONAL BANK
2002	06	4804802	100	6137	\$5,569.49	22	8AV0	December	ZIONS FIRST NATIONAL BANK
2002	07	4804802	100	6137	\$2,231.62	22	8AV0	January	ZIONS FIRST NATIONAL BANK
2002	07	4804802	100	6138	\$60.90	22	8AV0	January	Attorney Fees
2002	11	4804802	100	6137	\$23.00	22	8AV0	May	
2002	11	4804802	100	6137	\$5,343.71	22	8AV0	May	ZIONS FIRST NATIONAL BANK
2002	12	4804802	100	6137	\$22,818.55	22	8AV0	June	ZIONS FIRST NATIONAL BANK
2002	13	4804802	100	6137	\$3,302.94	22	8AV0	July - Old	ZIONS FIRST NATIONAL BANK
2003	04	4804802	100	6137	\$36,429.89	22	8AV0	October	ZIONS FIRST NATIONAL BANK
2003	04	4804802	100	6138	\$909.46	22	8AV0	October	Attorney Fees
2003	05	4804802	100	6137	\$3,952.03	22	8AV0	November	ZIONS FIRST NATIONAL BANK
2003	06	4804802	100	6137	\$185.33	22	8AV0	December	ZIONS FIRST NATIONAL BANK
2003	07	4804802	100	6137	\$1,328.95	22	8AV0	January	ZIONS FIRST NATIONAL BANK
2003	09	4804802	100	6137	\$31.73	22	8AV0	March	ZIONS FIRST NATIONAL BANK
2003	11	4804802	100	6137	\$19.00	22	8AV0	May	
2003	11	4804802	100	6137	\$4,658.56	22	8AV0	May	ZIONS FIRST NATIONAL BANK
2003	13	4804802	100	6137	\$2,172.97	22	8AV0	July - Old	ZIONS FIRST NATIONAL BANK
2004	02	4804802	100	6137	\$698.61	22	8AV0	August	ZIONS FIRST NATIONAL BANK
2004	03	4804802	100	6137	\$1,634.30	22	8AV0	September	ZIONS FIRST NATIONAL BANK
2004	04	4804802	100	6137	\$1,067.30	22	8AV0	October	ZIONS FIRST NATIONAL BANK
2004	05	4804802	100	6137	\$7,711.86	22	8AV0	November	ZIONS FIRST NATIONAL BANK
2004	06	4804802	100	6137	\$5,161.74	22	8AV0	December	URS CORPORATION
2004	06	4804802	100	6137	\$4,270.22	22	8AV0	December	ZIONS FIRST NATIONAL BANK
2004	07	4804802	100	6137	\$3,571.68	22	8AV0	January	URS CORPORATION
2004	07	4804802	100	6137	\$2,963.30	22	8AV0	January	ZIONS FIRST NATIONAL BANK
2004	08	4804802	100	6137	\$2,007.86	22	8AV0	February	URS CORPORATION
2004	08	4804802	100	6137	\$475.71	22	8AV0	February	ZIONS FIRST NATIONAL BANK
2004	09	4804802	100	6137	\$251.24	22	8AV0	March	ZIONS FIRST NATIONAL BANK
2004	10	4804802	100	6137	\$481.93	22	8AV0	April	URS CORPORATION

27,285.75
42.39
9,937.15
37,265.29 OVM Manual

\$763.56	Personal Services Earned	4804806	1999	02	5101	8AS6
\$1,809.92	Personal Services Earned	4804806	1999	03	5101	8AS6
\$973.24	Personal Services Earned	4804806	1999	04	5101	8AS6
\$943.91	Personal Services Earned	4804806	1999	05	5101	8AS6
\$830.62	Personal Services Earned	4804806	1999	06	5101	8AS6
\$660.92	Personal Services Earned	4804806	1999	07	5101	8AS6
\$517.92	Personal Services Earned	4804806	1999	08	5101	8AS6
\$890.06	Personal Services Earned	4804806	1999	09	5101	8AS6
\$2,352.58	Personal Services Earned	4804806	1999	10	5101	8AS6
\$284.25	Personal Services Earned	4804806	1999	11	5101	8AS6
\$414.67	Personal Services Earned	4804806	1999	12	5101	8AS6
\$184.14	Personal Services Earned	4804806	1999	13	5101	8AS6
\$119.61	State Retirement	4804806	1999	02	5160	8AS6
\$283.45	State Retirement	4804806	1999	03	5160	8AS6
\$152.39	State Retirement	4804806	1999	04	5160	8AS6
\$147.81	State Retirement	4804806	1999	05	5160	8AS6
\$130.07	State Retirement	4804806	1999	06	5160	8AS6
\$103.50	State Retirement	4804806	1999	07	5160	8AS6
\$81.10	State Retirement	4804806	1999	08	5160	8AS6
\$139.40	State Retirement	4804806	1999	09	5160	8AS6
\$368.40	State Retirement	4804806	1999	10	5160	8AS6
\$44.51	State Retirement	4804806	1999	11	5160	8AS6
\$64.94	State Retirement	4804806	1999	12	5160	8AS6
\$28.83	State Retirement	4804806	1999	13	5160	8AS6
\$58.43	FICA/Medicare	4804806	1999	02	5170	8AS6
\$138.44	FICA/Medicare	4804806	1999	03	5170	8AS6
\$74.44	FICA/Medicare	4804806	1999	04	5170	8AS6
\$72.20	FICA/Medicare	4804806	1999	05	5170	8AS6
\$62.18	FICA/Medicare	4804806	1999	06	5170	8AS6
\$50.55	FICA/Medicare	4804806	1999	07	5170	8AS6
\$39.63	FICA/Medicare	4804806	1999	08	5170	8AS6
\$68.11	FICA/Medicare	4804806	1999	09	5170	8AS6
\$179.97	FICA/Medicare	4804806	1999	10	5170	8AS6
\$21.75	FICA/Medicare	4804806	1999	11	5170	8AS6
\$31.72	FICA/Medicare	4804806	1999	12	5170	8AS6
\$14.09	FICA/Medicare	4804806	1999	13	5170	8AS6
\$87.20	Health/Dental/Life Insurance	4804806	1999	02	5180	8AS6
\$196.47	Health/Dental/Life Insurance	4804806	1999	03	5180	8AS6
\$73.93	Health/Dental/Life Insurance	4804806	1999	04	5180	8AS6
\$73.11	Health/Dental/Life Insurance	4804806	1999	05	5180	8AS6
\$61.71	Health/Dental/Life Insurance	4804806	1999	06	5180	8AS6
\$52.27	Health/Dental/Life Insurance	4804806	1999	07	5180	8AS6
\$45.91	Health/Dental/Life Insurance	4804806	1999	08	5180	8AS6
\$82.55	Health/Dental/Life Insurance	4804806	1999	09	5180	8AS6
\$200.40	Health/Dental/Life Insurance	4804806	1999	10	5180	8AS6
\$21.05	Health/Dental/Life Insurance	4804806	1999	11	5180	8AS6
\$28.09	Health/Dental/Life Insurance	4804806	1999	12	5180	8AS6
\$15.73	Health/Dental/Life Insurance	4804806	1999	13	5180	8AS6
\$7.03	Employer Insurance	4804806	1999	02	5190	8AS6
\$16.67	Employer Insurance	4804806	1999	03	5190	8AS6
\$8.98	Employer Insurance	4804806	1999	04	5190	8AS6
\$8.69	Employer Insurance	4804806	1999	05	5190	8AS6
\$7.65	Employer Insurance	4804806	1999	06	5190	8AS6
\$6.08	Employer Insurance	4804806	1999	07	5190	8AS6
\$4.77	Employer Insurance	4804806	1999	08	5190	8AS6
\$8.19	Employer Insurance	4804806	1999	09	5190	8AS6
\$21.65	Employer Insurance	4804806	1999	10	5190	8AS6
\$2.61	Employer Insurance	4804806	1999	11	5190	8AS6

55 OUI RA

FY 1999 = 357,058.91

FY 2000 = 13,683.00

FY 2001 = 28,975.01

\$3.82	Employer Insurance	4804806	1999	12	5190	8AS6
\$1.67	Employer Insurance	4804806	1999	13	5190	8AS6
\$15.29	State Leave Pool	4804806	1999	02	5300	8AS6
\$36.19	State Leave Pool	4804806	1999	03	5300	8AS6
\$19.22	State Leave Pool	4804806	1999	04	5300	8AS6
\$18.88	State Leave Pool	4804806	1999	05	5300	8AS6
\$16.62	State Leave Pool	4804806	1999	06	5300	8AS6
\$13.22	State Leave Pool	4804806	1999	07	5300	8AS6
\$10.37	State Leave Pool	4804806	1999	08	5300	8AS6
\$17.80	State Leave Pool	4804806	1999	09	5300	8AS6
\$47.06	State Leave Pool	4804806	1999	10	5300	8AS6
\$5.69	State Leave Pool	4804806	1999	11	5300	8AS6
\$8.29	State Leave Pool	4804806	1999	12	5300	8AS6
\$3.87	State Leave Pool	4804806	1999	13	5300	8AS6
\$73.98	Communication Services	4804806	1999	04	6132	8DS6
\$17.60	Communication Services	4804806	1999	05	6132	8DS6
\$21.25	Communication Services	4804806	1999	06	6132	8DS6
\$39.17	Communication Services	4804806	1999	08	6132	8DS6
\$9.16	Communication Services	4804806	1999	09	6132	8DS6
\$23.13	Communication Services	4804806	1999	10	6132	8DS6
\$34.24	Communication Services	4804806	1999	11	6132	8DS6
\$5.95	Communication Services	4804806	1999	12	6132	8DS6
\$10.86	Communication Services	4804806	1999	13	6132	8DS6
\$40,931.00	Prof/Tech Services	4804806	1999	10	6137	8AS6
\$297,738.05	Prof/Tech Services	4804806	1999	10	6137	8DS6
\$445.99	Prof/Tech Services	4804806	1999	13	6137	8AS6
\$12.44	Attorney Fees	4804806	1999	13	6138	8AS6
\$87.73	Building OS&M	4804806	1999	03	6171	8DS6
\$225.54	Building OS&M	4804806	1999	04	6171	8DS6
\$77.38	Building OS&M	4804806	1999	05	6171	8DS6
\$74.64	Building OS&M	4804806	1999	06	6171	8DS6
\$69.23	Building OS&M	4804806	1999	07	6171	8DS6
\$43.26	Building OS&M	4804806	1999	08	6171	8DS6
\$74.47	Building OS&M	4804806	1999	09	6171	8DS6
\$125.80	Building OS&M	4804806	1999	10	6171	8DS6
\$19.83	Building OS&M	4804806	1999	11	6171	8DS6
\$28.44	Building OS&M	4804806	1999	13	6171	8DS6
\$9.43	Photocopy Expenses	4804806	1999	03	6186	8DS6
\$0.06	Photocopy Expenses	4804806	1999	04	6186	8DS6
\$1.32	Photocopy Expenses	4804806	1999	05	6186	8DS6
\$0.11	Photocopy Expenses	4804806	1999	07	6186	8DS6
\$0.07	Photocopy Expenses	4804806	1999	08	6186	8DS6
\$0.22	Photocopy Expenses	4804806	1999	09	6186	8DS6
\$0.73	Photocopy Expenses	4804806	1999	10	6186	8DS6
\$0.10	Photocopy Expenses	4804806	1999	11	6186	8DS6
\$4.71	Photocopy Expenses	4804806	1999	13	6186	8DS6
\$192.61	Insurance & Bonds	4804806	1999	04	6263	8DS6
\$52.23	ITS Widenet Charge	4804806	1999	03	6544	8DS6
\$14.51	ITS Widenet Charge	4804806	1999	04	6544	8DS6
\$16.76	ITS Widenet Charge	4804806	1999	05	6544	8DS6
\$16.16	ITS Widenet Charge	4804806	1999	06	6544	8DS6
\$6.79	ITS Widenet Charge	4804806	1999	07	6544	8DS6
\$7.77	ITS Widenet Charge	4804806	1999	08	6544	8DS6
\$13.37	ITS Widenet Charge	4804806	1999	09	6544	8DS6
\$22.58	ITS Widenet Charge	4804806	1999	10	6544	8DS6
\$3.97	ITS Widenet Charge	4804806	1999	12	6544	8DS6
\$5.21	ITS Widenet Charge	4804806	1999	13	6544	8DS6
\$3.97	DP Expense Allocation	4804806	1999	04	6597	8DS6

\$0.70	DP Expense Allocation	4804806	1999	05	6597	8DS6
\$1.79	DP Expense Allocation	4804806	1999	07	6597	8DS6
\$0.89	DP Expense Allocation	4804806	1999	08	6597	8DS6
\$0.52	DP Expense Allocation	4804806	1999	09	6597	8DS6
\$1.78	DP Expense Allocation	4804806	1999	10	6597	8DS6
\$1.76	DP Expense Allocation	4804806	1999	11	6597	8DS6
\$0.26	DP Expense Allocation	4804806	1999	12	6597	8DS6
\$0.34	DP Expense Allocation	4804806	1999	13	6597	8DS6
\$31.94	Leave Usage Additive	4804806	1999	01	9901	8AS6
\$159.16	Leave Usage Additive	4804806	1999	02	9901	8AS6
\$104.08	Leave Usage Additive	4804806	1999	03	9901	8AS6
\$471.10	Leave Usage Additive	4804806	1999	04	9901	8AS6
\$170.17	Leave Usage Additive	4804806	1999	05	9901	8AS6
\$233.85	Leave Usage Additive	4804806	1999	06	9901	8AS6
\$365.60	Leave Usage Additive	4804806	1999	07	9901	8AS6
\$91.97	Leave Usage Additive	4804806	1999	08	9901	8AS6
\$143.42	Leave Usage Additive	4804806	1999	09	9901	8AS6
\$250.68	Leave Usage Additive	4804806	1999	10	9901	8AS6
\$32.75	Leave Usage Additive	4804806	1999	11	9901	8AS6
\$41.59	Leave Usage Additive	4804806	1999	12	9901	8AS6
\$48.48	Leave Usage Additive	4804806	1999	13	9901	8AS6
(\$5.82)	Leave Usage Additive	4804806	1999	13	9901	8DS6
\$357,058.87						
\$133.36	Personal Services Earned	4804806	2000	01	5101	8AS6
\$426.24	Personal Services Earned	4804806	2000	02	5101	8AS6
\$147.21	Personal Services Earned	4804806	2000	03	5101	8AS6
\$42.06	Personal Services Earned	4804806	2000	04	5101	8AS6
\$309.94	Personal Services Earned	4804806	2000	05	5101	8AS6
\$166.70	Personal Services Earned	4804806	2000	06	5101	8AS6
\$815.19	Personal Services Earned	4804806	2000	08	5101	8AS6
\$1,038.96	Personal Services Earned	4804806	2000	09	5101	8AS6
\$909.30	Personal Services Earned	4804806	2000	10	5101	8AS6
\$297.38	Personal Services Earned	4804806	2000	11	5101	8AS6
\$1,229.76	Personal Services Earned	4804806	2000	12	5101	8AS6
\$1,549.65	Personal Services Earned	4804806	2000	13	5101	8AS6
\$20.88	State Retirement	4804806	2000	01	5160	8AS6
\$66.75	State Retirement	4804806	2000	02	5160	8AS6
\$23.05	State Retirement	4804806	2000	03	5160	8AS6
\$6.60	State Retirement	4804806	2000	04	5160	8AS6
\$48.75	State Retirement	4804806	2000	05	5160	8AS6
\$26.11	State Retirement	4804806	2000	06	5160	8AS6
\$127.66	State Retirement	4804806	2000	08	5160	8AS6
\$162.71	State Retirement	4804806	2000	09	5160	8AS6
\$142.40	State Retirement	4804806	2000	10	5160	8AS6
\$46.56	State Retirement	4804806	2000	11	5160	8AS6
\$192.60	State Retirement	4804806	2000	12	5160	8AS6
\$238.06	State Retirement	4804806	2000	13	5160	8AS6
\$10.20	FICA/Medicare	4804806	2000	01	5170	8AS6
\$32.60	FICA/Medicare	4804806	2000	02	5170	8AS6
\$11.27	FICA/Medicare	4804806	2000	03	5170	8AS6
\$3.22	FICA/Medicare	4804806	2000	04	5170	8AS6
\$23.72	FICA/Medicare	4804806	2000	05	5170	8AS6
\$12.75	FICA/Medicare	4804806	2000	06	5170	8AS6
\$62.35	FICA/Medicare	4804806	2000	08	5170	8AS6
\$79.38	FICA/Medicare	4804806	2000	09	5170	8AS6
\$68.14	FICA/Medicare	4804806	2000	10	5170	8AS6

\$22.00	FICA/Medicare	4804806	2000	11	5170	8AS6
\$91.98	FICA/Medicare	4804806	2000	12	5170	8AS6
\$116.60	FICA/Medicare	4804806	2000	13	5170	8AS6
\$13.68	Health/Dental/Life Insurance	4804806	2000	01	5180	8AS6
\$39.00	Health/Dental/Life Insurance	4804806	2000	02	5180	8AS6
\$9.60	Health/Dental/Life Insurance	4804806	2000	03	5180	8AS6
\$2.76	Health/Dental/Life Insurance	4804806	2000	04	5180	8AS6
\$34.04	Health/Dental/Life Insurance	4804806	2000	05	5180	8AS6
\$17.09	Health/Dental/Life Insurance	4804806	2000	06	5180	8AS6
\$114.35	Health/Dental/Life Insurance	4804806	2000	08	5180	8AS6
\$107.60	Health/Dental/Life Insurance	4804806	2000	09	5180	8AS6
\$139.34	Health/Dental/Life Insurance	4804806	2000	10	5180	8AS6
\$55.08	Health/Dental/Life Insurance	4804806	2000	11	5180	8AS6
\$188.22	Health/Dental/Life Insurance	4804806	2000	12	5180	8AS6
\$224.74	Health/Dental/Life Insurance	4804806	2000	13	5180	8AS6
\$1.22	Employer Insurance	4804806	2000	01	5190	8AS6
\$3.88	Employer Insurance	4804806	2000	02	5190	8AS6
\$1.33	Employer Insurance	4804806	2000	03	5190	8AS6
\$0.38	Employer Insurance	4804806	2000	04	5190	8AS6
\$2.83	Employer Insurance	4804806	2000	05	5190	8AS6
\$1.51	Employer Insurance	4804806	2000	06	5190	8AS6
\$7.42	Employer Insurance	4804806	2000	08	5190	8AS6
\$9.44	Employer Insurance	4804806	2000	09	5190	8AS6
\$8.10	Employer Insurance	4804806	2000	10	5190	8AS6
\$2.63	Employer Insurance	4804806	2000	11	5190	8AS6
\$10.97	Employer Insurance	4804806	2000	12	5190	8AS6
\$13.85	Employer Insurance	4804806	2000	13	5190	8AS6
\$2.80	State Leave Pool	4804806	2000	01	5300	8AS6
\$8.95	State Leave Pool	4804806	2000	02	5300	8AS6
\$3.09	State Leave Pool	4804806	2000	03	5300	8AS6
\$0.88	State Leave Pool	4804806	2000	04	5300	8AS6
\$6.51	State Leave Pool	4804806	2000	05	5300	8AS6
\$3.50	State Leave Pool	4804806	2000	06	5300	8AS6
\$17.11	State Leave Pool	4804806	2000	08	5300	8AS6
\$21.81	State Leave Pool	4804806	2000	09	5300	8AS6
\$19.09	State Leave Pool	4804806	2000	10	5300	8AS6
\$6.25	State Leave Pool	4804806	2000	11	5300	8AS6
\$25.83	State Leave Pool	4804806	2000	12	5300	8AS6
\$32.53	State Leave Pool	4804806	2000	13	5300	8AS6
\$106.83	In State Motor Rental	4804806	2000	12	6001	8AS6
\$13.95	In State Auto Reimbursement	4804806	2000	04	6002	8AS6
\$64.79	In State Auto Reimbursement	4804806	2000	13	6002	8AS6
\$9.00	Out State Misc Travel	4804806	2000	04	6053	8AS6
\$4.00	Out State Misc Travel	4804806	2000	13	6053	8AS6
\$86.00	Out State Meal Reimbursement	4804806	2000	04	6055	8AS6
\$18.00	Out State Meal Reimbursement	4804806	2000	13	6055	8AS6
\$212.42	Out State Lodging	4804806	2000	04	6056	8AS6
\$80.00	Out State Transportation Cost	4804806	2000	04	6057	8AS6
\$414.00	Out State Transportation Cost	4804806	2000	13	6057	8AS6
\$19.57	Communication Services	4804806	2000	03	6132	8AS6
\$3.48	Communication Services	4804806	2000	04	6132	8AS6
\$0.60	Communication Services	4804806	2000	05	6132	8AS6
\$7.29	Communication Services	4804806	2000	06	6132	8AS6
\$3.60	Communication Services	4804806	2000	07	6132	8AS6
\$16.80	Communication Services	4804806	2000	09	6132	8AS6
\$15.00	Communication Services	4804806	2000	10	6132	8AS6
\$21.01	Communication Services	4804806	2000	11	6132	8AS6
\$6.00	Communication Services	4804806	2000	12	6132	8AS6

\$46.22	Communication Services	4804806	2000	13	6132	8AS6
\$494.00	Prof/Tech Services	4804806	2000	11	6137	8AS6
\$15.25	Attorney Fees	4804806	2000	11	6138	8AS6
\$10.09	Rent Motor Pool Vehicle	4804806	2000	06	6165	8AS6
\$6.01	Rent Motor Pool Vehicle	4804806	2000	09	6165	8AS6
\$70.22	Building OS&M	4804806	2000	02	6171	8AS6
\$13.95	Building OS&M	4804806	2000	04	6171	8AS6
\$23.28	Building OS&M	4804806	2000	05	6171	8AS6
\$13.93	Building OS&M	4804806	2000	06	6171	8AS6
\$60.81	Building OS&M	4804806	2000	08	6171	8AS6
\$51.06	Building OS&M	4804806	2000	09	6171	8AS6
\$67.48	Building OS&M	4804806	2000	10	6171	8AS6
\$22.94	Building OS&M	4804806	2000	11	6171	8AS6
\$125.48	Building OS&M	4804806	2000	13	6171	8AS6
\$34.46	Photocopy Expenses	4804806	2000	02	6186	8AS6
\$15.35	Photocopy Expenses	4804806	2000	03	6186	8AS6
\$8.25	Photocopy Expenses	4804806	2000	04	6186	8AS6
\$0.51	Photocopy Expenses	4804806	2000	11	6186	8AS6
\$0.45	Photocopy Expenses	4804806	2000	13	6186	8AS6
\$212.48	Insurance & Bonds	4804806	2000	05	6263	8AS6
\$13.13	ITS Widenet Charge	4804806	2000	02	6544	8AS6
\$2.61	ITS Widenet Charge	4804806	2000	04	6544	8AS6
\$4.35	ITS Widenet Charge	4804806	2000	05	6544	8AS6
\$2.61	ITS Widenet Charge	4804806	2000	06	6544	8AS6
\$11.37	ITS Widenet Charge	4804806	2000	08	6544	8AS6
\$9.55	ITS Widenet Charge	4804806	2000	09	6544	8AS6
\$12.74	ITS Widenet Charge	4804806	2000	10	6544	8AS6
\$4.29	ITS Widenet Charge	4804806	2000	11	6544	8AS6
\$23.66	ITS Widenet Charge	4804806	2000	13	6544	8AS6
\$1.36	DP Expense Allocation	4804806	2000	03	6597	8AS6
\$0.14	DP Expense Allocation	4804806	2000	04	6597	8AS6
\$0.03	DP Expense Allocation	4804806	2000	05	6597	8AS6
\$0.28	DP Expense Allocation	4804806	2000	06	6597	8AS6
\$0.17	DP Expense Allocation	4804806	2000	07	6597	8AS6
\$2.17	DP Expense Allocation	4804806	2000	09	6597	8AS6
\$2.17	DP Expense Allocation	4804806	2000	10	6597	8AS6
\$2.80	DP Expense Allocation	4804806	2000	11	6597	8AS6
\$0.97	DP Expense Allocation	4804806	2000	12	6597	8AS6
\$8.83	DP Expense Allocation	4804806	2000	13	6597	8AS6
\$31.34	Leave Usage Additive	4804806	2000	01	9901	8AS6
\$100.16	Leave Usage Additive	4804806	2000	02	9901	8AS6
\$64.10	Leave Usage Additive	4804806	2000	03	9901	8AS6
\$9.91	Leave Usage Additive	4804806	2000	04	9901	8AS6
\$66.76	Leave Usage Additive	4804806	2000	05	9901	8AS6
\$57.31	Leave Usage Additive	4804806	2000	06	9901	8AS6
\$123.15	Leave Usage Additive	4804806	2000	08	9901	8AS6
\$168.56	Leave Usage Additive	4804806	2000	09	9901	8AS6
\$85.79	Leave Usage Additive	4804806	2000	10	9901	8AS6
\$44.78	Leave Usage Additive	4804806	2000	11	9901	8AS6
\$426.36	Leave Usage Additive	4804806	2000	12	9901	8AS6
\$147.57	Leave Usage Additive	4804806	2000	13	9901	8AS6
\$13,683.08						
\$39.26	Personal Services Earned	4804806	2001	01	5101	8AS6
\$315.65	Personal Services Earned	4804806	2001	02	5101	8AS6
\$211.97	Personal Services Earned	4804806	2001	03	5101	8AS6
\$58.89	Personal Services Earned	4804806	2001	04	5101	8AS6

\$61.74	Personal Services Earned	4804806	2001	05	5101	8AS6
\$30.25	Personal Services Earned	4804806	2001	06	5101	8AS6
\$39.26	Personal Services Earned	4804806	2001	09	5101	8AS6
\$5.97	State Retirement	4804806	2001	01	5160	8AS6
\$47.92	State Retirement	4804806	2001	02	5160	8AS6
\$32.22	State Retirement	4804806	2001	03	5160	8AS6
\$8.94	State Retirement	4804806	2001	04	5160	8AS6
\$9.39	State Retirement	4804806	2001	05	5160	8AS6
\$4.58	State Retirement	4804806	2001	06	5160	8AS6
\$5.96	State Retirement	4804806	2001	09	5160	8AS6
\$2.87	FICA/Medicare	4804806	2001	01	5170	8AS6
\$23.62	FICA/Medicare	4804806	2001	02	5170	8AS6
\$16.07	FICA/Medicare	4804806	2001	03	5170	8AS6
\$4.31	FICA/Medicare	4804806	2001	04	5170	8AS6
\$4.53	FICA/Medicare	4804806	2001	05	5170	8AS6
\$2.30	FICA/Medicare	4804806	2001	06	5170	8AS6
\$2.87	FICA/Medicare	4804806	2001	09	5170	8AS6
\$7.94	Health/Dental/Life Insurance	4804806	2001	01	5180	8AS6
\$46.16	Health/Dental/Life Insurance	4804806	2001	02	5180	8AS6
\$22.48	Health/Dental/Life Insurance	4804806	2001	03	5180	8AS6
\$11.91	Health/Dental/Life Insurance	4804806	2001	04	5180	8AS6
\$10.65	Health/Dental/Life Insurance	4804806	2001	05	5180	8AS6
\$2.18	Health/Dental/Life Insurance	4804806	2001	06	5180	8AS6
\$7.84	Health/Dental/Life Insurance	4804806	2001	09	5180	8AS6
\$0.34	Employer Insurance	4804806	2001	01	5190	8AS6
\$2.80	Employer Insurance	4804806	2001	02	5190	8AS6
\$1.93	Employer Insurance	4804806	2001	03	5190	8AS6
\$0.53	Employer Insurance	4804806	2001	04	5190	8AS6
\$0.55	Employer Insurance	4804806	2001	05	5190	8AS6
\$0.27	Employer Insurance	4804806	2001	06	5190	8AS6
\$0.35	Employer Insurance	4804806	2001	09	5190	8AS6
\$0.83	State Leave Pool	4804806	2001	01	5300	8AS6
\$6.62	State Leave Pool	4804806	2001	02	5300	8AS6
\$4.45	State Leave Pool	4804806	2001	03	5300	8AS6
\$1.24	State Leave Pool	4804806	2001	04	5300	8AS6
\$1.30	State Leave Pool	4804806	2001	05	5300	8AS6
\$0.63	State Leave Pool	4804806	2001	06	5300	8AS6
\$0.82	State Leave Pool	4804806	2001	09	5300	8AS6
\$6.51	Communication Services	4804806	2001	02	6132	8AS6
\$5.85	Communication Services	4804806	2001	03	6132	8AS6
\$2.79	Communication Services	4804806	2001	04	6132	8AS6
\$1.22	Communication Services	4804806	2001	05	6132	8AS6
\$1.25	Communication Services	4804806	2001	06	6132	8AS6
\$0.64	Communication Services	4804806	2001	07	6132	8AS6
\$0.47	Communication Services	4804806	2001	10	6132	8AS6
\$16,232.60	Prof/Tech Services	4804806	2001	08	6137	8AS6 BOR
\$11,111.13	Prof/Tech Services	4804806	2001	11	6137	8AS6 BOR
\$10.00	Prof/Tech Services	4804806	2001	12	6137	8AS6 BOR
\$19.15	Rent Motor Pool Vehicle	4804806	2001	02	6165	8AS6
\$10.63	Rent Motor Pool Vehicle	4804806	2001	05	6165	8AS6
\$45.26	Building OS&M	4804806	2001	02	6171	8AS6
\$9.90	Building OS&M	4804806	2001	03	6171	8AS6
\$4.93	Building OS&M	4804806	2001	04	6171	8AS6
\$4.54	Building OS&M	4804806	2001	05	6171	8AS6
\$2.46	Building OS&M	4804806	2001	06	6171	8AS6
\$1.91	Building OS&M	4804806	2001	09	6171	8AS6
\$78.81	Photocopy Expenses	4804806	2001	02	6186	8AS6
\$0.19	Photocopy Expenses	4804806	2001	03	6186	8AS6

\$ 27,353.73

\$0.27	Photocopy Expenses	4804806	2001	04	6186	8AS6
\$0.03	Photocopy Expenses	4804806	2001	08	6186	8AS6
\$0.87	Photocopy Expenses	4804806	2001	09	6186	8AS6
\$135.14	Insurance & Bonds	4804806	2001	02	6263	8AS6
\$7.77	ITS Widenet Charge	4804806	2001	02	6544	8AS6
\$1.70	ITS Widenet Charge	4804806	2001	03	6544	8AS6
\$0.85	ITS Widenet Charge	4804806	2001	04	6544	8AS6
\$0.78	ITS Widenet Charge	4804806	2001	05	6544	8AS6
\$0.43	ITS Widenet Charge	4804806	2001	06	6544	8AS6
\$0.32	ITS Widenet Charge	4804806	2001	09	6544	8AS6
\$1.46	DP Expense Allocation	4804806	2001	02	6597	8AS6
\$0.29	DP Expense Allocation	4804806	2001	03	6597	8AS6
\$0.13	DP Expense Allocation	4804806	2001	04	6597	8AS6
\$0.14	DP Expense Allocation	4804806	2001	05	6597	8AS6
\$0.13	DP Expense Allocation	4804806	2001	06	6597	8AS6
\$0.07	DP Expense Allocation	4804806	2001	07	6597	8AS6
\$0.24	DP Expense Allocation	4804806	2001	10	6597	8AS6
\$3.97	Leave Usage Additive	4804806	2001	01	9901	8AS6
\$123.19	Leave Usage Additive	4804806	2001	02	9901	8AS6
\$40.01	Leave Usage Additive	4804806	2001	03	9901	8AS6
\$22.07	Leave Usage Additive	4804806	2001	04	9901	8AS6
\$10.13	Leave Usage Additive	4804806	2001	05	9901	8AS6
\$10.96	Leave Usage Additive	4804806	2001	06	9901	8AS6
\$4.03	Leave Usage Additive	4804806	2001	09	9901	8AS6
\$28,975.61						

28,975.61
 - 27,353.73 BOR
 1,621.88 DEQ

SumOfACTUAL	Object Description	FISC_YEAR	C_MON	OBJECT	FY_XORGAN	REPORTING_CATEGOR
\$296.03	Personal Services Earned	2001	01	5101	4804802	8AV0
\$44.93	State Retirement	2001	01	5160	4804802	8AV0
\$22.19	FICA/Medicare	2001	01	5170	4804802	8AV0
\$42.19	Health/Dental/Life Insurance	2001	01	5180	4804802	8AV0
\$2.64	Employer Insurance	2001	01	5190	4804802	8AV0
\$6.21	State Leave Pool	2001	01	5300	4804802	8AV0
\$955.22	Personal Services Earned	2001	02	5101	4804802	8AV0
\$144.99	State Retirement	2001	02	5160	4804802	8AV0
\$70.91	FICA/Medicare	2001	02	5170	4804802	8AV0
\$157.74	Health/Dental/Life Insurance	2001	02	5180	4804802	8AV0
\$8.43	Employer Insurance	2001	02	5190	4804802	8AV0
\$20.06	State Leave Pool	2001	02	5300	4804802	8AV0
\$22.36	Communication Services	2001	02	6132	4804802	8AV0
\$155.57	Building OS&M	2001	02	6171	4804802	8AV0
\$26.72	ITS Widenet Charge	2001	02	6544	4804802	8AV0
\$5.03	DP Expense Allocation	2001	02	6597	4804802	8AV0
\$384.20	Leave Usage Additive	2001	02	9901	4804802	8AV0
\$2,755.53	Personal Services Earned	2001	03	5101	4804802	8AV0
\$418.26	State Retirement	2001	03	5160	4804802	8AV0
\$203.27	FICA/Medicare	2001	03	5170	4804802	8AV0
\$496.81	Health/Dental/Life Insurance	2001	03	5180	4804802	8AV0
\$24.43	Employer Insurance	2001	03	5190	4804802	8AV0
\$57.87	State Leave Pool	2001	03	5300	4804802	8AV0
\$20.12	Communication Services	2001	03	6132	4804802	8AV0
\$137.33	Building OS&M	2001	03	6171	4804802	8AV0
\$23.59	ITS Widenet Charge	2001	03	6544	4804802	8AV0
\$1.00	DP Expense Allocation	2001	03	6597	4804802	8AV0
\$609.41	Leave Usage Additive	2001	03	9901	4804802	8AV0
\$1,632.45	Personal Services Earned	2001	04	5101	4804802	8AV0
\$247.81	State Retirement	2001	04	5160	4804802	8AV0
\$120.42	FICA/Medicare	2001	04	5170	4804802	8AV0
\$294.59	Health/Dental/Life Insurance	2001	04	5180	4804802	8AV0
\$15.96	Employer Insurance	2001	04	5190	4804802	8AV0
\$34.29	State Leave Pool	2001	04	5300	4804802	8AV0
\$38.63	Communication Services	2001	04	6132	4804802	8AV0
\$126.82	Building OS&M	2001	04	6171	4804802	8AV0
\$21.79	ITS Widenet Charge	2001	04	6544	4804802	8AV0
\$1.79	DP Expense Allocation	2001	04	6597	4804802	8AV0
\$427.48	Leave Usage Additive	2001	04	9901	4804802	8AV0
\$1,154.70	Personal Services Earned	2001	05	5101	4804802	8AV0
\$175.29	State Retirement	2001	05	5160	4804802	8AV0
\$85.26	FICA/Medicare	2001	05	5170	4804802	8AV0
\$218.74	Health/Dental/Life Insurance	2001	05	5180	4804802	8AV0
\$10.46	Employer Insurance	2001	05	5190	4804802	8AV0
\$24.25	State Leave Pool	2001	05	5300	4804802	8AV0
\$31.39	Communication Services	2001	05	6132	4804802	8AV0
\$27.32	Rent Motor Pool Vehicle	2001	05	6165	4804802	8AV0
\$86.41	Building OS&M	2001	05	6171	4804802	8AV0
\$14.81	ITS Widenet Charge	2001	05	6544	4804802	8AV0
\$3.62	DP Expense Allocation	2001	05	6597	4804802	8AV0
\$201.28	Leave Usage Additive	2001	05	9901	4804802	8AV0
\$946.94	Personal Services Earned	2001	06	5101	4804802	8AV0
\$147.07	State Retirement	2001	06	5160	4804802	8AV0
\$61.86	FICA/Medicare	2001	06	5170	4804802	8AV0
\$168.25	Health/Dental/Life Insurance	2001	06	5180	4804802	8AV0
\$8.79	Employer Insurance	2001	06	5190	4804802	8AV0

SS O+M

2001-2004

Personnel \$
costs: 45.50/m

UDER Personell

BOR
URS

SS OUI RA

FY 1996 = 8,809,048.16

FY 1997 = 13,160,414.77

FY 1998 = 1,510,462.20

FY 1999 = 357,058.97

FY 2000 = 13,683.08

FY 2001 = 28,975.61

SS OUI O+M

FY 2000 = -0-

FY 2001 = 56,099.16

FY 2002 = 75,978.70

FY 2003 = 67,742.61

FY 2004 = 63,121.81

\$19.89	State Leave Pool	2001	06	5300	4804802	8AV0
\$23.78	Communication Services	2001	06	6132	4804802	8AV0
\$80.73	Building OS&M	2001	06	6171	4804802	8AV0
\$13.94	ITS Widenet Charge	2001	06	6544	4804802	8AV0
\$2.46	DP Expense Allocation	2001	06	6597	4804802	8AV0
\$324.37	Leave Usage Additive	2001	06	9901	4804802	8AV0
\$87.07	Personal Services Earned	2001	07	5101	4804802	8AV0
\$13.22	State Retirement	2001	07	5160	4804802	8AV0
\$6.40	FICA/Medicare	2001	07	5170	4804802	8AV0
\$12.10	Health/Dental/Life Insurance	2001	07	5180	4804802	8AV0
\$0.79	Employer Insurance	2001	07	5190	4804802	8AV0
\$1.83	State Leave Pool	2001	07	5300	4804802	8AV0
\$20.85	Communication Services	2001	07	6132	4804802	8AV0
\$9.53	Building OS&M	2001	07	6171	4804802	8AV0
\$1.64	ITS Widenet Charge	2001	07	6544	4804802	8AV0
\$2.35	DP Expense Allocation	2001	07	6597	4804802	8AV0
\$80.15	Leave Usage Additive	2001	07	9901	4804802	8AV0
\$972.19	Personal Services Earned	2001	08	5101	4804802	8AV0
\$147.59	State Retirement	2001	08	5160	4804802	8AV0
\$71.46	FICA/Medicare	2001	08	5170	4804802	8AV0
\$176.26	Health/Dental/Life Insurance	2001	08	5180	4804802	8AV0
\$8.80	Employer Insurance	2001	08	5190	4804802	8AV0
\$20.41	State Leave Pool	2001	08	5300	4804802	8AV0
\$2.31	Communication Services	2001	08	6132	4804802	8AV0
\$14.81	Rent Motor Pool Vehicle	2001	08	6165	4804802	8AV0
\$68.85	Building OS&M	2001	08	6171	4804802	8AV0
\$11.82	ITS Widenet Charge	2001	08	6544	4804802	8AV0
\$0.28	DP Expense Allocation	2001	08	6597	4804802	8AV0
\$118.63	Leave Usage Additive	2001	08	9901	4804802	8AV0
\$1,255.57	Personal Services Earned	2001	09	5101	4804802	8AV0
\$190.63	State Retirement	2001	09	5160	4804802	8AV0
\$92.38	FICA/Medicare	2001	09	5170	4804802	8AV0
\$218.50	Health/Dental/Life Insurance	2001	09	5180	4804802	8AV0
\$11.37	Employer Insurance	2001	09	5190	4804802	8AV0
\$26.37	State Leave Pool	2001	09	5300	4804802	8AV0
\$17.38	Communication Services	2001	09	6132	4804802	8AV0
\$61.75	Building OS&M	2001	09	6171	4804802	8AV0
\$10.35	ITS Widenet Charge	2001	09	6544	4804802	8AV0
\$2.28	DP Expense Allocation	2001	09	6597	4804802	8AV0
\$183.44	Leave Usage Additive	2001	09	9901	4804802	8AV0
\$1,175.45	Personal Services Earned	2001	10	5101	4804802	8AV0
\$178.45	State Retirement	2001	10	5160	4804802	8AV0
\$86.32	FICA/Medicare	2001	10	5170	4804802	8AV0
\$218.84	Health/Dental/Life Insurance	2001	10	5180	4804802	8AV0
\$10.64	Employer Insurance	2001	10	5190	4804802	8AV0
\$24.69	State Leave Pool	2001	10	5300	4804802	8AV0
\$15.05	Communication Services	2001	10	6132	4804802	8AV0
\$84.23	Building OS&M	2001	10	6171	4804802	8AV0
\$14.46	ITS Widenet Charge	2001	10	6544	4804802	8AV0
\$7.82	DP Expense Allocation	2001	10	6597	4804802	8AV0
\$148.83	Leave Usage Additive	2001	10	9901	4804802	8AV0
\$2,581.76	Personal Services Earned	2001	11	5101	4804802	8AV0
\$392.02	State Retirement	2001	11	5160	4804802	8AV0
\$191.68	FICA/Medicare	2001	11	5170	4804802	8AV0
\$388.34	Health/Dental/Life Insurance	2001	11	5180	4804802	8AV0
\$23.43	Employer Insurance	2001	11	5190	4804802	8AV0
\$54.21	State Leave Pool	2001	11	5300	4804802	8AV0

\$24.33	Communication Services	2001	11	6132	4804802	8AV0
\$27,285.75	Prof/Tech Services	2001	11	6137	4804802	8AV0
\$178.44	Building OS&M	2001	11	6171	4804802	8AV0
\$30.63	ITS Widenet Charge	2001	11	6544	4804802	8AV0
\$8.15	DP Expense Allocation	2001	11	6597	4804802	8AV0
\$263.56	Leave Usage Additive	2001	11	9901	4804802	8AV0
\$2,371.95	Personal Services Earned	2001	12	5101	4804802	8AV0
\$360.10	State Retirement	2001	12	5160	4804802	8AV0
\$175.70	FICA/Medicare	2001	12	5170	4804802	8AV0
\$375.28	Health/Dental/Life Insurance	2001	12	5180	4804802	8AV0
\$21.51	Employer Insurance	2001	12	5190	4804802	8AV0
\$49.80	State Leave Pool	2001	12	5300	4804802	8AV0
\$48.15	Communication Services	2001	12	6132	4804802	8AV0
\$8.70	Rent Motor Pool Vehicle	2001	12	6165	4804802	8AV0
\$6.83	Photocopy Expenses	2001	12	6186	4804802	8AV0
\$9.64	DP Expense Allocation	2001	12	6597	4804802	8AV0
\$460.63	Leave Usage Additive	2001	12	9901	4804802	8AV0
\$492.75	Personal Services Earned	2001	13	5101	4804802	8AV0
\$58.65	State Retirement	2001	13	5160	4804802	8AV0
\$36.24	FICA/Medicare	2001	13	5170	4804802	8AV0
\$89.19	Health/Dental/Life Insurance	2001	13	5180	4804802	8AV0
\$4.42	Employer Insurance	2001	13	5190	4804802	8AV0
\$10.75	State Leave Pool	2001	13	5300	4804802	8AV0
\$40.60	Communication Services	2001	13	6132	4804802	8AV0
\$42.39	Prof/Tech Services	2001	13	6137	4804802	8AV0
\$123.17	Building OS&M	2001	13	6171	4804802	8AV0
\$0.04	Photocopy Expenses	2001	13	6186	4804802	8AV0
\$21.10	ITS Widenet Charge	2001	13	6544	4804802	8AV0
\$0.84	DP Expense Allocation	2001	13	6597	4804802	8AV0
\$77.61	Leave Usage Additive	2001	13	9901	4804802	8AV0
\$56,099.16						
\$241.49	Personal Services Earned	2002	01	5101	4804802	8AV0
\$28.74	State Retirement	2002	01	5160	4804802	8AV0
\$17.78	FICA/Medicare	2002	01	5170	4804802	8AV0
\$42.73	Health/Dental/Life Insurance	2002	01	5180	4804802	8AV0
\$2.17	Employer Insurance	2002	01	5190	4804802	8AV0
\$5.27	State Leave Pool	2002	01	5300	4804802	8AV0
\$52.40	Leave Usage Additive	2002	01	9901	4804802	8AV0
\$2,146.99	Personal Services Earned	2002	02	5101	4804802	8AV0
\$255.58	State Retirement	2002	02	5160	4804802	8AV0
\$159.37	FICA/Medicare	2002	02	5170	4804802	8AV0
\$328.64	Health/Dental/Life Insurance	2002	02	5180	4804802	8AV0
\$19.27	Employer Insurance	2002	02	5190	4804802	8AV0
\$46.82	State Leave Pool	2002	02	5300	4804802	8AV0
\$9,937.15	Prof/Tech Services	2002	02	6137	4804802	8AV0
\$607.67	Leave Usage Additive	2002	02	9901	4804802	8AV0
\$895.98	Personal Services Earned	2002	03	5101	4804802	8AV0
\$106.62	State Retirement	2002	03	5160	4804802	8AV0
\$65.74	FICA/Medicare	2002	03	5170	4804802	8AV0
\$160.12	Health/Dental/Life Insurance	2002	03	5180	4804802	8AV0
\$8.03	Employer Insurance	2002	03	5190	4804802	8AV0
\$19.54	State Leave Pool	2002	03	5300	4804802	8AV0
\$10.53	Rent Motor Pool Vehicle	2002	03	6165	4804802	8AV0
\$249.13	Building OS&M	2002	03	6171	4804802	8AV0
\$34.05	Insurance & Bonds	2002	03	6263	4804802	8AV0

BOR Contract

BOR

\$44.38	ITS Widenet Charge	2002	03	6544	4804802	8AV0	
\$52.65	Leave Usage Additive	2002	03	9901	4804802	8AV0	
\$1,382.76	Personal Services Earned	2002	04	5101	4804802	8AV0	
\$164.52	State Retirement	2002	04	5160	4804802	8AV0	
\$101.37	FICA/Medicare	2002	04	5170	4804802	8AV0	
\$254.31	Health/Dental/Life Insurance	2002	04	5180	4804802	8AV0	
\$12.39	Employer Insurance	2002	04	5190	4804802	8AV0	
\$30.14	State Leave Pool	2002	04	5300	4804802	8AV0	
\$61.68	Communication Services	2002	04	6132	4804802	8AV0	
\$92.21	Building OS&M	2002	04	6171	4804802	8AV0	
\$16.43	ITS Widenet Charge	2002	04	6544	4804802	8AV0	
\$27.09	DP Expense Allocation	2002	04	6597	4804802	8AV0	
\$300.05	Leave Usage Additive	2002	04	9901	4804802	8AV0	
\$1,020.41	Personal Services Earned	2002	05	5101	4804802	8AV0	
\$121.44	State Retirement	2002	05	5160	4804802	8AV0	
\$74.89	FICA/Medicare	2002	05	5170	4804802	8AV0	
\$183.72	Health/Dental/Life Insurance	2002	05	5180	4804802	8AV0	
\$8.53	Employer Insurance	2002	05	5190	4804802	8AV0	
\$22.25	State Leave Pool	2002	05	5300	4804802	8AV0	
\$23.43	Communication Services	2002	05	6132	4804802	8AV0	
\$63.01	Building OS&M	2002	05	6171	4804802	8AV0	
\$5.39	Photocopy Expenses	2002	05	6186	4804802	8AV0	
\$11.22	ITS Widenet Charge	2002	05	6544	4804802	8AV0	
\$1.20	DP Expense Allocation	2002	05	6597	4804802	8AV0	
\$221.43	Leave Usage Additive	2002	05	9901	4804802	8AV0	
\$1,425.69	Personal Services Earned	2002	06	5101	4804802	8AV0	
\$169.67	State Retirement	2002	06	5160	4804802	8AV0	
\$104.98	FICA/Medicare	2002	06	5170	4804802	8AV0	
\$234.34	Health/Dental/Life Insurance	2002	06	5180	4804802	8AV0	
\$11.94	Employer Insurance	2002	06	5190	4804802	8AV0	
\$31.09	State Leave Pool	2002	06	5300	4804802	8AV0	
\$17.07	Communication Services	2002	06	6132	4804802	8AV0	
\$5,569.49	Prof/Tech Services	2002	06	6137	4804802	8AV0	BOR
\$97.97	Building OS&M	2002	06	6171	4804802	8AV0	
\$2.77	Photocopy Expenses	2002	06	6186	4804802	8AV0	
\$34.28	Insurance & Bonds	2002	06	6263	4804802	8AV0	
\$17.45	ITS Widenet Charge	2002	06	6544	4804802	8AV0	
\$0.85	DP Expense Allocation	2002	06	6597	4804802	8AV0	
\$309.38	Leave Usage Additive	2002	06	9901	4804802	8AV0	
\$659.98	Personal Services Earned	2002	07	5101	4804802	8AV0	
\$78.54	State Retirement	2002	07	5160	4804802	8AV0	
\$46.56	FICA/Medicare	2002	07	5170	4804802	8AV0	
\$105.10	Health/Dental/Life Insurance	2002	07	5180	4804802	8AV0	
\$5.51	Employer Insurance	2002	07	5190	4804802	8AV0	
\$14.38	State Leave Pool	2002	07	5300	4804802	8AV0	
\$26.75	Communication Services	2002	07	6132	4804802	8AV0	
\$2,231.62	Prof/Tech Services	2002	07	6137	4804802	8AV0	BOR
\$60.90	Attorney Fees	2002	07	6138	4804802	8AV0	
\$8.86	Rent Motor Pool Vehicle	2002	07	6165	4804802	8AV0	
\$51.36	Building OS&M	2002	07	6171	4804802	8AV0	
\$4.07	Photocopy Expenses	2002	07	6186	4804802	8AV0	
\$9.15	ITS Widenet Charge	2002	07	6544	4804802	8AV0	
\$1.31	DP Expense Allocation	2002	07	6597	4804802	8AV0	
\$143.22	Leave Usage Additive	2002	07	9901	4804802	8AV0	
\$592.35	Personal Services Earned	2002	08	5101	4804802	8AV0	
\$70.48	State Retirement	2002	08	5160	4804802	8AV0	
\$43.23	FICA/Medicare	2002	08	5170	4804802	8AV0	

\$94.29	Health/Dental/Life Insurance	2002	08	5180	4804802	8AV0
\$4.95	Employer Insurance	2002	08	5190	4804802	8AV0
\$12.92	State Leave Pool	2002	08	5300	4804802	8AV0
\$13.21	Communication Services	2002	08	6132	4804802	8AV0
\$37.75	Building OS&M	2002	08	6171	4804802	8AV0
\$6.73	ITS Widenet Charge	2002	08	6544	4804802	8AV0
\$0.69	DP Expense Allocation	2002	08	6597	4804802	8AV0
\$128.55	Leave Usage Additive	2002	08	9901	4804802	8AV0
\$1,065.03	Personal Services Earned	2002	09	5101	4804802	8AV0
\$126.75	State Retirement	2002	09	5160	4804802	8AV0
\$77.22	FICA/Medicare	2002	09	5170	4804802	8AV0
\$186.28	Health/Dental/Life Insurance	2002	09	5180	4804802	8AV0
\$8.89	Employer Insurance	2002	09	5190	4804802	8AV0
\$23.23	State Leave Pool	2002	09	5300	4804802	8AV0
\$11.42	Communication Services	2002	09	6132	4804802	8AV0
\$45.33	Building OS&M	2002	09	6171	4804802	8AV0
\$18.21	Insurance & Bonds	2002	09	6263	4804802	8AV0
\$8.08	ITS Widenet Charge	2002	09	6544	4804802	8AV0
\$3.60	DP Expense Allocation	2002	09	6597	4804802	8AV0
\$231.11	Leave Usage Additive	2002	09	9901	4804802	8AV0
\$1,735.53	Personal Services Earned	2002	10	5101	4804802	8AV0
\$206.55	State Retirement	2002	10	5160	4804802	8AV0
\$124.20	FICA/Medicare	2002	10	5170	4804802	8AV0
\$262.49	Health/Dental/Life Insurance	2002	10	5180	4804802	8AV0
\$14.48	Employer Insurance	2002	10	5190	4804802	8AV0
\$37.84	State Leave Pool	2002	10	5300	4804802	8AV0
\$9.31	Communication Services	2002	10	6132	4804802	8AV0
\$104.54	Building OS&M	2002	10	6171	4804802	8AV0
\$18.62	ITS Widenet Charge	2002	10	6544	4804802	8AV0
\$0.64	DP Expense Allocation	2002	10	6597	4804802	8AV0
\$376.61	Leave Usage Additive	2002	10	9901	4804802	8AV0
\$1,944.80	Personal Services Earned	2002	11	5101	4804802	8AV0
\$231.45	State Retirement	2002	11	5160	4804802	8AV0
\$141.11	FICA/Medicare	2002	11	5170	4804802	8AV0
\$309.16	Health/Dental/Life Insurance	2002	11	5180	4804802	8AV0
\$16.26	Employer Insurance	2002	11	5190	4804802	8AV0
\$42.40	State Leave Pool	2002	11	5300	4804802	8AV0
\$30.04	Communication Services	2002	11	6132	4804802	8AV0
\$5,366.71	Prof/Tech Services	2002	11	6137	4804802	8AV0 BOR
\$10.77	Rent Motor Pool Vehicle	2002	11	6165	4804802	8AV0
\$120.77	Building OS&M	2002	11	6171	4804802	8AV0
\$21.52	ITS Widenet Charge	2002	11	6544	4804802	8AV0
\$1.80	DP Expense Allocation	2002	11	6597	4804802	8AV0
\$431.74	Leave Usage Additive	2002	11	9901	4804802	8AV0
\$2,190.69	Personal Services Earned	2002	12	5101	4804802	8AV0
\$260.69	State Retirement	2002	12	5160	4804802	8AV0
\$159.50	FICA/Medicare	2002	12	5170	4804802	8AV0
\$395.35	Health/Dental/Life Insurance	2002	12	5180	4804802	8AV0
\$18.29	Employer Insurance	2002	12	5190	4804802	8AV0
\$47.78	State Leave Pool	2002	12	5300	4804802	8AV0
\$33.06	Communication Services	2002	12	6132	4804802	8AV0
\$22,818.55	Prof/Tech Services	2002	12	6137	4804802	8AV0 BOR
\$0.04	Photocopy Expenses	2002	12	6186	4804802	8AV0
\$2.03	DP Expense Allocation	2002	12	6597	4804802	8AV0
\$593.04	Leave Usage Additive	2002	12	9901	4804802	8AV0
\$255.45	Personal Services Earned	2002	13	5101	4804802	8AV0
\$30.41	State Retirement	2002	13	5160	4804802	8AV0

\$18.73	FICA/Medicare	2002	13	5170	4804802	8AV0
\$48.21	Health/Dental/Life Insurance	2002	13	5180	4804802	8AV0
\$2.13	Employer Insurance	2002	13	5190	4804802	8AV0
\$5.58	State Leave Pool	2002	13	5300	4804802	8AV0
\$43.95	Wireless Communications	2002	13	6126	4804802	8AV0
(\$15.73)	Communication Services	2002	13	6132	4804802	8AV0
\$3,302.94	Prof/Tech Services	2002	13	6137	4804802	8AV0 BOR
\$22.01	Rent Motor Pool Vehicle	2002	13	6165	4804802	8AV0
\$36.72	Building OS&M	2002	13	6171	4804802	8AV0
\$6.26	Other Equipment OS&M	2002	13	6175	4804802	8AV0
\$3.97	Photocopy Expenses	2002	13	6186	4804802	8AV0
\$42.29	Insurance & Bonds	2002	13	6263	4804802	8AV0
\$16.40	ITS Widenet Charge	2002	13	6544	4804802	8AV0
\$0.07	DP Expense Allocation	2002	13	6597	4804802	8AV0
\$57.66	Leave Usage Additive	2002	13	9901	4804802	8AV0
\$75,978.70						
\$156.34	Personal Services Earned	2003	01	5101	4804802	8AV0
\$18.60	State Retirement	2003	01	5160	4804802	8AV0
\$11.42	FICA/Medicare	2003	01	5170	4804802	8AV0
\$31.19	Health/Dental/Life Insurance	2003	01	5180	4804802	8AV0
\$1.29	Employer Insurance	2003	01	5190	4804802	8AV0
\$3.41	State Leave Pool	2003	01	5300	4804802	8AV0
\$34.55	Leave Usage Additive	2003	01	9901	4804802	8AV0
\$2,485.39	Personal Services Earned	2003	02	5101	4804802	8AV0
\$295.78	State Retirement	2003	02	5160	4804802	8AV0
\$183.75	FICA/Medicare	2003	02	5170	4804802	8AV0
\$491.53	Health/Dental/Life Insurance	2003	02	5180	4804802	8AV0
\$20.81	Employer Insurance	2003	02	5190	4804802	8AV0
\$54.19	State Leave Pool	2003	02	5300	4804802	8AV0
\$41.71	Rent Motor Pool Vehicle	2003	02	6165	4804802	8AV0
\$221.56	Building OS&M	2003	02	6171	4804802	8AV0
\$31.25	ITS Widenet Charge	2003	02	6544	4804802	8AV0
\$549.27	Leave Usage Additive	2003	02	9901	4804802	8AV0
\$840.58	Personal Services Earned	2003	03	5101	4804802	8AV0
\$100.04	State Retirement	2003	03	5160	4804802	8AV0
\$61.92	FICA/Medicare	2003	03	5170	4804802	8AV0
\$172.59	Health/Dental/Life Insurance	2003	03	5180	4804802	8AV0
\$7.02	Employer Insurance	2003	03	5190	4804802	8AV0
\$18.33	State Leave Pool	2003	03	5300	4804802	8AV0
\$55.40	Communication Services	2003	03	6132	4804802	8AV0
\$47.33	Rent Motor Pool Vehicle	2003	03	6165	4804802	8AV0
\$57.18	Building OS&M	2003	03	6171	4804802	8AV0
\$33.92	Insurance & Bonds	2003	03	6263	4804802	8AV0
\$8.06	ITS Widenet Charge	2003	03	6544	4804802	8AV0
\$5.82	DP Expense Allocation	2003	03	6597	4804802	8AV0
\$185.76	Leave Usage Additive	2003	03	9901	4804802	8AV0
\$314.77	Personal Services Earned	2003	04	5101	4804802	8AV0
\$37.47	State Retirement	2003	04	5160	4804802	8AV0
\$23.27	FICA/Medicare	2003	04	5170	4804802	8AV0
\$58.41	Health/Dental/Life Insurance	2003	04	5180	4804802	8AV0
\$2.64	Employer Insurance	2003	04	5190	4804802	8AV0
\$6.87	State Leave Pool	2003	04	5300	4804802	8AV0
\$19.58	Communication Services	2003	04	6132	4804802	8AV0
\$36,429.89	Prof/Tech Services	2003	04	6137	4804802	8AV0 BOR
\$909.46	Attorney Fees	2003	04	6138	4804802	8AV0

\$20.19	Building OS&M	2003	04	6171	4804802	8AV0	
\$0.31	Photocopy Expenses	2003	04	6186	4804802	8AV0	
\$2.85	ITS Widenet Charge	2003	04	6544	4804802	8AV0	
\$1.67	DP Expense Allocation	2003	04	6597	4804802	8AV0	
\$69.57	Leave Usage Additive	2003	04	9901	4804802	8AV0	
\$189.84	Personal Services Earned	2003	05	5101	4804802	8AV0	
\$22.58	State Retirement	2003	05	5160	4804802	8AV0	
\$13.95	FICA/Medicare	2003	05	5170	4804802	8AV0	
\$39.64	Health/Dental/Life Insurance	2003	05	5180	4804802	8AV0	
\$1.59	Employer Insurance	2003	05	5190	4804802	8AV0	
\$4.14	State Leave Pool	2003	05	5300	4804802	8AV0	
\$3,952.03	Prof/Tech Services	2003	05	6137	4804802	8AV0	BOR
\$12.83	Building OS&M	2003	05	6171	4804802	8AV0	
\$1.81	ITS Widenet Charge	2003	05	6544	4804802	8AV0	
\$41.96	Leave Usage Additive	2003	05	9901	4804802	8AV0	
\$1,030.86	Personal Services Earned	2003	06	5101	4804802	8AV0	
\$122.64	State Retirement	2003	06	5160	4804802	8AV0	
\$76.13	FICA/Medicare	2003	06	5170	4804802	8AV0	
\$205.48	Health/Dental/Life Insurance	2003	06	5180	4804802	8AV0	
\$8.63	Employer Insurance	2003	06	5190	4804802	8AV0	
\$22.48	State Leave Pool	2003	06	5300	4804802	8AV0	
\$3.30	Communication Services	2003	06	6132	4804802	8AV0	
\$185.33	Prof/Tech Services	2003	06	6137	4804802	8AV0	BOR
\$73.07	Building OS&M	2003	06	6171	4804802	8AV0	
\$6.75	Photocopy Expenses	2003	06	6186	4804802	8AV0	
\$12.97	Insurance & Bonds	2003	06	6263	4804802	8AV0	
\$34.90	ITS Widenet Charge	2003	06	6544	4804802	8AV0	
\$0.25	DP Expense Allocation	2003	06	6597	4804802	8AV0	
\$227.82	Leave Usage Additive	2003	06	9901	4804802	8AV0	
\$393.64	Personal Services Earned	2003	07	5101	4804802	8AV0	
\$46.87	State Retirement	2003	07	5160	4804802	8AV0	
\$28.31	FICA/Medicare	2003	07	5170	4804802	8AV0	
\$80.29	Health/Dental/Life Insurance	2003	07	5180	4804802	8AV0	
\$3.28	Employer Insurance	2003	07	5190	4804802	8AV0	
\$8.59	State Leave Pool	2003	07	5300	4804802	8AV0	
\$24.38	Communication Services	2003	07	6132	4804802	8AV0	
\$1,328.95	Prof/Tech Services	2003	07	6137	4804802	8AV0	BOR
\$19.98	Building OS&M	2003	07	6171	4804802	8AV0	
\$2.08	Photocopy Expenses	2003	07	6186	4804802	8AV0	
\$3.94	ITS Widenet Charge	2003	07	6544	4804802	8AV0	
\$1.44	DP Expense Allocation	2003	07	6597	4804802	8AV0	
\$86.99	Leave Usage Additive	2003	07	9901	4804802	8AV0	
\$287.56	Personal Services Earned	2003	08	5101	4804802	8AV0	
\$34.24	State Retirement	2003	08	5160	4804802	8AV0	
\$21.06	FICA/Medicare	2003	08	5170	4804802	8AV0	
\$46.17	Health/Dental/Life Insurance	2003	08	5180	4804802	8AV0	
\$2.40	Employer Insurance	2003	08	5190	4804802	8AV0	
\$6.28	State Leave Pool	2003	08	5300	4804802	8AV0	
\$5.15	Communication Services	2003	08	6132	4804802	8AV0	
\$19.12	Building OS&M	2003	08	6171	4804802	8AV0	
\$38.58	Photocopy Expenses	2003	08	6186	4804802	8AV0	
\$3.48	ITS Widenet Charge	2003	08	6544	4804802	8AV0	
\$0.40	DP Expense Allocation	2003	08	6597	4804802	8AV0	
\$63.55	Leave Usage Additive	2003	08	9901	4804802	8AV0	
\$738.43	Personal Services Earned	2003	09	5101	4804802	8AV0	
\$87.90	State Retirement	2003	09	5160	4804802	8AV0	
\$51.32	FICA/Medicare	2003	09	5170	4804802	8AV0	

\$140.38	Health/Dental/Life Insurance	2003	09	5180	4804802	8AV0	
\$6.20	Employer Insurance	2003	09	5190	4804802	8AV0	
\$16.09	State Leave Pool	2003	09	5300	4804802	8AV0	
\$4.63	Communication Services	2003	09	6132	4804802	8AV0	
\$31.73	Prof/Tech Services	2003	09	6137	4804802	8AV0	BOR
\$46.80	Building OS&M	2003	09	6171	4804802	8AV0	
\$0.64	Photocopy Expenses	2003	09	6186	4804802	8AV0	
\$8.87	ITS Widenet Charge	2003	09	6544	4804802	8AV0	
\$0.38	DP Expense Allocation	2003	09	6597	4804802	8AV0	
\$43.81	Leave Usage Additive	2003	09	9901	4804802	8AV0	
\$1,133.47	Personal Services Earned	2003	10	5101	4804802	8AV0	
\$134.89	State Retirement	2003	10	5160	4804802	8AV0	
\$74.88	FICA/Medicare	2003	10	5170	4804802	8AV0	
\$230.88	Health/Dental/Life Insurance	2003	10	5180	4804802	8AV0	
\$9.51	Employer Insurance	2003	10	5190	4804802	8AV0	
\$24.71	State Leave Pool	2003	10	5300	4804802	8AV0	
\$11.39	Communication Services	2003	10	6132	4804802	8AV0	
\$79.75	Building OS&M	2003	10	6171	4804802	8AV0	
\$12.97	Insurance & Bonds	2003	10	6263	4804802	8AV0	
\$15.12	ITS Widenet Charge	2003	10	6544	4804802	8AV0	
\$0.94	DP Expense Allocation	2003	10	6597	4804802	8AV0	
\$369.88	Leave Usage Additive	2003	10	9901	4804802	8AV0	
\$630.94	Personal Services Earned	2003	11	5101	4804802	8AV0	
\$75.08	State Retirement	2003	11	5160	4804802	8AV0	
\$45.58	FICA/Medicare	2003	11	5170	4804802	8AV0	
\$129.84	Health/Dental/Life Insurance	2003	11	5180	4804802	8AV0	
\$5.28	Employer Insurance	2003	11	5190	4804802	8AV0	
\$13.76	State Leave Pool	2003	11	5300	4804802	8AV0	
\$18.15	Communication Services	2003	11	6132	4804802	8AV0	
\$4,677.56	Prof/Tech Services	2003	11	6137	4804802	8AV0	BOR
\$13.59	Rent Motor Pool Vehicle	2003	11	6165	4804802	8AV0	
\$44.09	Building OS&M	2003	11	6171	4804802	8AV0	
\$22.87	Photocopy Expenses	2003	11	6186	4804802	8AV0	
\$8.36	ITS Widenet Charge	2003	11	6544	4804802	8AV0	
\$1.66	DP Expense Allocation	2003	11	6597	4804802	8AV0	
\$145.75	Leave Usage Additive	2003	11	9901	4804802	8AV0	
\$1,473.36	Personal Services Earned	2003	12	5101	4804802	8AV0	
\$175.33	State Retirement	2003	12	5160	4804802	8AV0	
\$83.01	FICA/Medicare	2003	12	5170	4804802	8AV0	
\$305.88	Health/Dental/Life Insurance	2003	12	5180	4804802	8AV0	
\$12.36	Employer Insurance	2003	12	5190	4804802	8AV0	
\$32.12	State Leave Pool	2003	12	5300	4804802	8AV0	
\$11.07	Communication Services	2003	12	6132	4804802	8AV0	
\$11.76	Rent Motor Pool Vehicle	2003	12	6165	4804802	8AV0	
\$0.28	Photocopy Expenses	2003	12	6186	4804802	8AV0	
\$0.89	DP Expense Allocation	2003	12	6597	4804802	8AV0	
\$384.43	Leave Usage Additive	2003	12	9901	4804802	8AV0	
\$503.19	Personal Services Earned	2003	13	5101	4804802	8AV0	
\$66.43	State Retirement	2003	13	5160	4804802	8AV0	
\$36.38	FICA/Medicare	2003	13	5170	4804802	8AV0	
\$107.95	Health/Dental/Life Insurance	2003	13	5180	4804802	8AV0	
\$4.22	Employer Insurance	2003	13	5190	4804802	8AV0	
\$10.97	State Leave Pool	2003	13	5300	4804802	8AV0	
\$20.36	Wireless Communications	2003	13	6126	4804802	8AV0	
\$0.26	Communication Services	2003	13	6132	4804802	8AV0	
\$2,172.97	Prof/Tech Services	2003	13	6137	4804802	8AV0	BOR
\$79.69	Building OS&M	2003	13	6171	4804802	8AV0	

\$26.43	Insurance & Bonds	2003	13	6263	4804802	8AV0
\$15.10	ITS Widenet Charge	2003	13	6544	4804802	8AV0
\$0.07	DP Expense Allocation	2003	13	6597	4804802	8AV0
\$129.37	Leave Usage Additive	2003	13	9901	4804802	8AV0
\$67,742.61						
\$287.45	Personal Services Earned	2004	01	5101	4804802	8AV0
\$37.95	State Retirement	2004	01	5160	4804802	8AV0
\$21.10	FICA/Medicare	2004	01	5170	4804802	8AV0
\$48.89	Health/Dental/Life Insurance	2004	01	5180	4804802	8AV0
\$2.42	Employer Insurance	2004	01	5190	4804802	8AV0
\$6.27	State Leave Pool	2004	01	5300	4804802	8AV0
\$65.25	Leave Usage Additive	2004	01	9901	4804802	8AV0
\$1,299.71	Personal Services Earned	2004	02	5101	4804802	8AV0
\$171.60	State Retirement	2004	02	5160	4804802	8AV0
\$95.16	FICA/Medicare	2004	02	5170	4804802	8AV0
\$207.68	Health/Dental/Life Insurance	2004	02	5180	4804802	8AV0
\$10.91	Employer Insurance	2004	02	5190	4804802	8AV0
\$28.35	State Leave Pool	2004	02	5300	4804802	8AV0
\$18.84	Postage and Mailing	2004	02	6136	4804802	8AV0
\$698.61	Prof/Tech Services	2004	02	6137	4804802	8AV0 BOR
\$135.89	Building OS&M	2004	02	6171	4804802	8AV0
\$3.42	Photocopy Expenses	2004	02	6186	4804802	8AV0
\$25.76	ITS Widenet Charge	2004	02	6544	4804802	8AV0
\$295.03	Leave Usage Additive	2004	02	9901	4804802	8AV0
\$2,252.60	Personal Services Earned	2004	03	5101	4804802	8AV0
\$297.36	State Retirement	2004	03	5160	4804802	8AV0
\$163.34	FICA/Medicare	2004	03	5170	4804802	8AV0
\$409.74	Health/Dental/Life Insurance	2004	03	5180	4804802	8AV0
\$18.90	Employer Insurance	2004	03	5190	4804802	8AV0
\$49.12	State Leave Pool	2004	03	5300	4804802	8AV0
\$32.15	Communication Services	2004	03	6132	4804802	8AV0
\$8.09	Postage and Mailing	2004	03	6136	4804802	8AV0
\$1,634.30	Prof/Tech Services	2004	03	6137	4804802	8AV0 BOR
\$152.23	Building OS&M	2004	03	6171	4804802	8AV0
\$38.05	Insurance & Bonds	2004	03	6263	4804802	8AV0
\$28.85	ITS Widenet Charge	2004	03	6544	4804802	8AV0
\$2.94	DP Expense Allocation	2004	03	6597	4804802	8AV0
\$511.34	Leave Usage Additive	2004	03	9901	4804802	8AV0
\$2,311.88	Personal Services Earned	2004	04	5101	4804802	8AV0
\$305.25	State Retirement	2004	04	5160	4804802	8AV0
\$170.73	FICA/Medicare	2004	04	5170	4804802	8AV0
\$338.38	Health/Dental/Life Insurance	2004	04	5180	4804802	8AV0
\$19.42	Employer Insurance	2004	04	5190	4804802	8AV0
\$50.40	State Leave Pool	2004	04	5300	4804802	8AV0
\$44.86	Communication Services	2004	04	6132	4804802	8AV0
\$1,067.30	Prof/Tech Services	2004	04	6137	4804802	8AV0 BOR
\$11.82	Rent Motor Pool Vehicle	2004	04	6165	4804802	8AV0
\$155.59	Building OS&M	2004	04	6171	4804802	8AV0
\$27.31	Photocopy Expenses	2004	04	6186	4804802	8AV0
\$29.49	ITS Widenet Charge	2004	04	6544	4804802	8AV0
\$0.82	DP Expense Allocation	2004	04	6597	4804802	8AV0
\$524.80	Leave Usage Additive	2004	04	9901	4804802	8AV0
\$1,199.16	Personal Services Earned	2004	05	5101	4804802	8AV0
\$158.33	State Retirement	2004	05	5160	4804802	8AV0
\$87.56	FICA/Medicare	2004	05	5170	4804802	8AV0

\$201.02	Health/Dental/Life Insurance	2004	05	5180	4804802	8AV0
\$10.07	Employer Insurance	2004	05	5190	4804802	8AV0
\$26.14	State Leave Pool	2004	05	5300	4804802	8AV0
\$35.77	Communication Services	2004	05	6132	4804802	8AV0
\$7,711.86	Prof/Tech Services	2004	05	6137	4804802	8AV0 BOR
\$12.84	Rent Motor Pool Vehicle	2004	05	6165	4804802	8AV0
\$82.11	Building OS&M	2004	05	6171	4804802	8AV0
\$8.74	Photocopy Expenses	2004	05	6186	4804802	8AV0
\$15.56	ITS Widenet Charge	2004	05	6544	4804802	8AV0
\$0.80	DP Expense Allocation	2004	05	6597	4804802	8AV0
\$272.20	Leave Usage Additive	2004	05	9901	4804802	8AV0
\$1,710.71	Personal Services Earned	2004	06	5101	4804802	8AV0
\$225.82	State Retirement	2004	06	5160	4804802	8AV0
\$115.40	FICA/Medicare	2004	06	5170	4804802	8AV0
\$326.42	Health/Dental/Life Insurance	2004	06	5180	4804802	8AV0
\$14.35	Employer Insurance	2004	06	5190	4804802	8AV0
\$37.30	State Leave Pool	2004	06	5300	4804802	8AV0
\$20.64	Communication Services	2004	06	6132	4804802	8AV0
\$9,431.96	Prof/Tech Services	2004	06	6137	4804802	8AV0 BOR + URS
\$13.27	Rent Motor Pool Vehicle	2004	06	6165	4804802	8AV0
\$82.11	Building OS&M	2004	06	6171	4804802	8AV0
\$5.22	Photocopy Expenses	2004	06	6186	4804802	8AV0
\$44.88	Insurance & Bonds	2004	06	6263	4804802	8AV0
\$15.56	ITS Widenet Charge	2004	06	6544	4804802	8AV0
\$0.42	DP Expense Allocation	2004	06	6597	4804802	8AV0
\$388.34	Leave Usage Additive	2004	06	9901	4804802	8AV0
\$2,834.99	Personal Services Earned	2004	07	5101	4804802	8AV0
\$374.31	State Retirement	2004	07	5160	4804802	8AV0
\$209.54	FICA/Medicare	2004	07	5170	4804802	8AV0
\$467.16	Health/Dental/Life Insurance	2004	07	5180	4804802	8AV0
\$23.80	Employer Insurance	2004	07	5190	4804802	8AV0
\$61.81	State Leave Pool	2004	07	5300	4804802	8AV0
\$18.96	Communication Services	2004	07	6132	4804802	8AV0
\$6,534.98	Prof/Tech Services	2004	07	6137	4804802	8AV0 BOR + URS
\$169.31	Building OS&M	2004	07	6171	4804802	8AV0
\$12.14	Photocopy Expenses	2004	07	6186	4804802	8AV0
\$32.09	ITS Widenet Charge	2004	07	6544	4804802	8AV0
\$0.43	DP Expense Allocation	2004	07	6597	4804802	8AV0
\$643.54	Leave Usage Additive	2004	07	9901	4804802	8AV0
\$1,142.07	Personal Services Earned	2004	08	5101	4804802	8AV0
\$150.79	State Retirement	2004	08	5160	4804802	8AV0
\$84.39	FICA/Medicare	2004	08	5170	4804802	8AV0
\$185.43	Health/Dental/Life Insurance	2004	08	5180	4804802	8AV0
\$9.59	Employer Insurance	2004	08	5190	4804802	8AV0
\$24.91	State Leave Pool	2004	08	5300	4804802	8AV0
\$43.63	Communication Services	2004	08	6132	4804802	8AV0
\$2,483.57	Prof/Tech Services	2004	08	6137	4804802	8AV0 BOR + URS
\$8.22	Rent Motor Pool Vehicle	2004	08	6165	4804802	8AV0
\$77.13	Building OS&M	2004	08	6171	4804802	8AV0
\$56.43	Photocopy Expenses	2004	08	6186	4804802	8AV0
\$14.62	ITS Widenet Charge	2004	08	6544	4804802	8AV0
\$30.49	DP Expense Allocation	2004	08	6597	4804802	8AV0
\$259.25	Leave Usage Additive	2004	08	9901	4804802	8AV0
\$2,883.30	Personal Services Earned	2004	09	5101	4804802	8AV0
\$380.67	State Retirement	2004	09	5160	4804802	8AV0
\$213.02	FICA/Medicare	2004	09	5170	4804802	8AV0
\$482.37	Health/Dental/Life Insurance	2004	09	5180	4804802	8AV0

URS: 5161.74
BOR: 4270.22

URS: 3571.68
BOR: 2963.30

URS: 2007.86
BOR: 473.71

\$24.22	Employer Insurance	2004	09	5190	4804802	8AV0
\$62.85	State Leave Pool	2004	09	5300	4804802	8AV0
\$17.90	Communication Services	2004	09	6132	4804802	8AV0
\$251.24	Prof/Tech Services	2004	09	6137	4804802	8AV0 BOR
\$15.38	Rent Motor Pool Vehicle	2004	09	6165	4804802	8AV0
\$198.12	Building OS&M	2004	09	6171	4804802	8AV0
\$16.36	Photocopy Expenses	2004	09	6186	4804802	8AV0
\$56.15	Insurance & Bonds	2004	09	6263	4804802	8AV0
\$37.55	ITS Widenet Charge	2004	09	6544	4804802	8AV0
\$0.40	DP Expense Allocation	2004	09	6597	4804802	8AV0
\$654.51	Leave Usage Additive	2004	09	9901	4804802	8AV0
\$3,010.68	Personal Services Earned	2004	10	5101	4804802	8AV0
\$397.45	State Retirement	2004	10	5160	4804802	8AV0
\$220.77	FICA/Medicare	2004	10	5170	4804802	8AV0
\$570.30	Health/Dental/Life Insurance	2004	10	5180	4804802	8AV0
\$25.28	Employer Insurance	2004	10	5190	4804802	8AV0
\$65.65	State Leave Pool	2004	10	5300	4804802	8AV0
\$45.76	Communication Services	2004	10	6132	4804802	8AV0
\$481.93	Prof/Tech Services	2004	10	6137	4804802	8AV0 URS
\$1.03	DP Expense Allocation	2004	10	6597	4804802	8AV0
\$683.43	Leave Usage Additive	2004	10	9901	4804802	8AV0
\$63,121.81						

Thru 4-30-04
2 months left.

Attachment 5

Photographic Record

Color Photo(s)

The following pages
contain color that does
not appear in the
scanned images.

To view the actual images, please
contact the Superfund Records
Center at (303) 312-6473.



Photo 1. Site overview dating from 1999; looking south.



Photo 2. Western slope looking south on 8-27-03. 5th year of drought.



Photo 3. View looking south in August 2002 at western slope.



Photo 4. Photo of wetlands, Jordan River and access road on 11-25-03.



Photo 5. View to east of North slope on 2-23-04.



Photo 6. View to east of southern slope on 2-23-04.



Photo 7. View of interceptor trench on 2-23-04.



Photo 8. View of wetlands and SS cap behind them on 2-23-04.



Photo 9. View of first intrusive geotechnical drilling through cap.

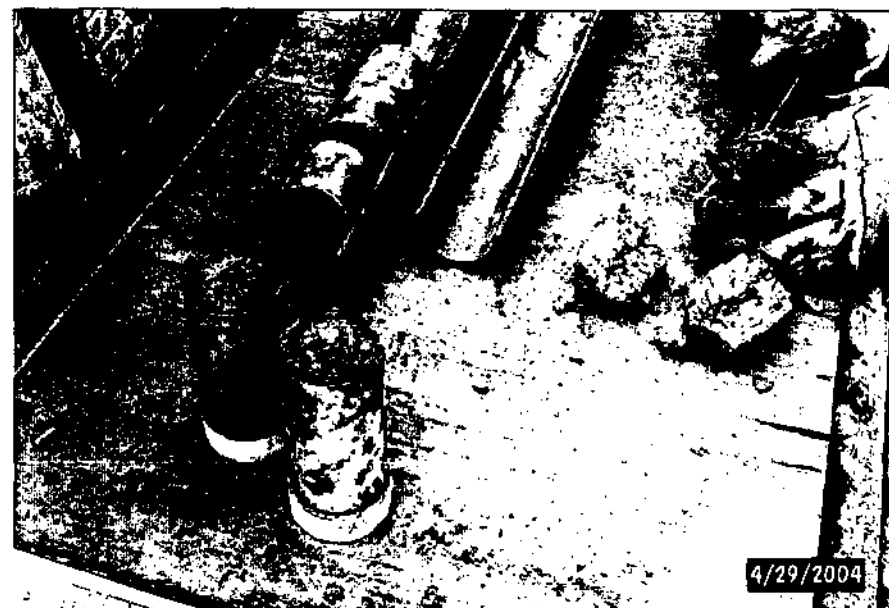


Photo 10. Core taken from native soil beneath tailings 50' down.



Photo 11. New fill material placed by new property owner on NE corner of OU1 site near former mill building facilities. View to W – NW.



Photo 12. View to east of north slope of the cap along 7800 So. Street. Photo taken during Quarterly Site Inspection.



Photo 13. View of animal-caused burrow holes on north slope.

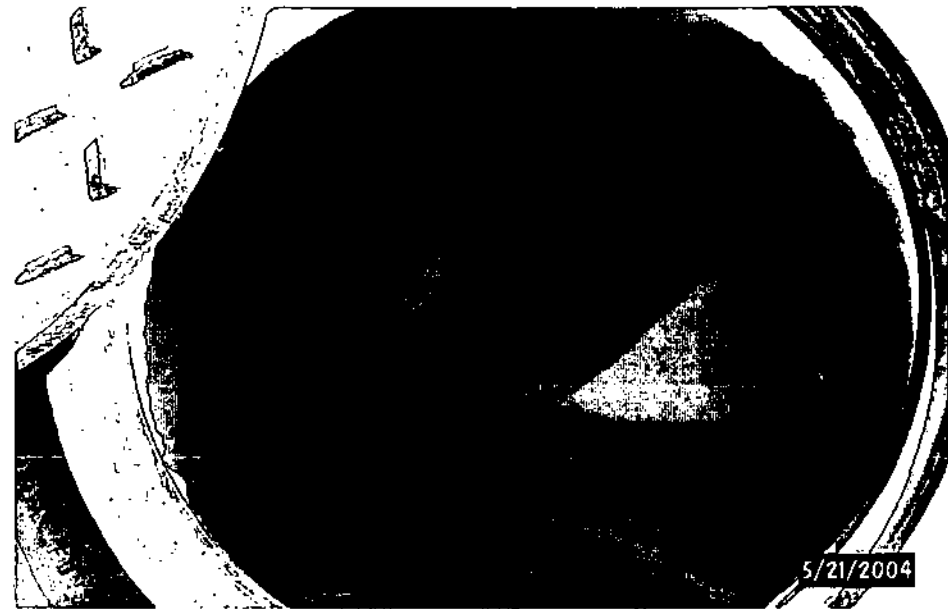


Photo 14. View of clean drain taken during Quarterly Site Inspection.



Photo 15. View of interceptor trench in May 2004. Water is flowing cold and clear.



Photo 16. View of drying western slope of Sharon Steel cap in 6th year of drought. Jordan River is on the center right of photo.

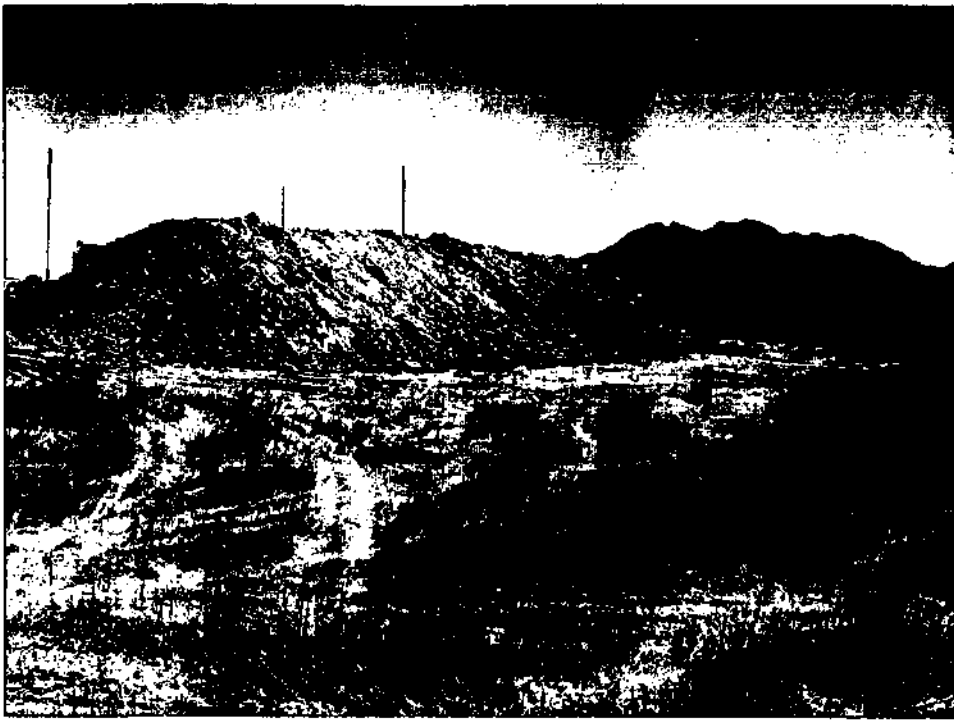


Photo 17. Geotechnical study surcharge pile on top of cap. 1 of 4 piles.



Photo 18. Taken 6-15-04. New road & surcharge pile on top of cap.



Photo 19. Trenching on western slope of cap on 6-15-04 for studies.



Photo 20. Shallow trenching on top of the cap for studies on 6-15-04.



Photo 21. SS OU2 Commercial property along 700 West. P004. Photo from 9-17-97, post cleanup. Property contained > 6,000 ppm Pb and 270 ppm As.



Photo 22. SS OU2 commercial property along 700 West. P004. Photo from 7-7-04. Same property as above.



Photo 23. SS OU2 commercial property along 700 West. P043. Former main office of USSMRC. Photo taken 9-10-97. Property contained > 6,000 ppm Pb and 230 ppm As.



Photo 24. SS OU2 commercial property along 700 West. P043. Former main office of USSMRC. Photo taken 7-7-04. Same property as in Photo 23.



Photo 25. SS OU2 residence M016. Lennox & Holden Streets. Photo taken 9-17-97. Property contained 2,367 ppm Pb and 210 ppm As.



Photo 26. SS OU2 residential property M016, photo taken 7-7-04. Same property as photo 25 with house removed.



Photo 27. SS OU2 commercial property near City Hall. Photo taken 9-16-97. Property contained 5,400 ppm Pb and > 250 ppm As.



Photo 28. SS OU2 commercial property near City Hall. Photo taken 7-7-04, same photo as # 27. Midvale City Business Park currently vacant.



Photo 29. SS OU2 residential property R149 on 3rd Avenue. Photo taken 9-16-97.
Property contained > 6,000 ppm Pb and > 250 ppm As.



Photo 30. Same residential property as photo 29. Photo taken 7-7-04.



Photo 31. SS OU2 residential property F088; photo taken 9-16-97. Property contained 3,500 ppm Pb and 150 ppm As.



Photo 32. SS OU2 residential property F088; photo taken 7-7-04. Property still contains 3,500 ppm Pb and 150 ppm As beneath the sidewalks and other hard surfaces.



Photo 33. SS OU2 residential property P155; photo taken 09-16-97. Property contained 2,600 ppm Pb and 88 ppm As. Located in downtown Midvale City on Center Street.



Photo 34. SS OU2 residential property P155; photo taken 07-07-04. Same property as above photo.

Attachment 6

Interview Records

SHARON STEEL
FIVE-YEAR REVIEW
COMMUNITY INTERVIEWS

Interviews were conducted with various representatives of the community regarding the Sharon Steel Superfund Site in Midvale, Utah. Interviews were conducted by Dave Allison of the Utah Department of Environmental Quality and took place from May 17 through June 17, 2004.

The primary concern expressed by most of those interviewed is the possibility for redevelopment of a vast portion of the non-residential area of the Sharon Steel site (approximately 265 acres). An impermeable membrane capping remedy for this area (OUI) has complicated construction options for the city for 10 years. The lack of redevelopment opportunities represents a lot of lost revenue for Midvale City during a time the Salt Lake Valley is experiencing tremendous growth.

As far as the Sharon Steel remediation cap functioning and protecting human health and the environment, there were no short-term concerns expressed. The site remains well fenced and vegetated with no noticeable erosion or construction activities occurring over the last five-years which may have disturbed the integrity of the cap. Future environmental concerns with the Community Technical Assistance Group, Citizens For a Safe Future for Midvale (CFSFM) regard the Jordan River adjacent to the Sharon Steel site. CFSFM is not sure how vulnerable the Jordan River is to the contaminants below the cap leaching through groundwater into the river. The Sharon Steel cap rests on a terrace above the river and questions remain if leaching groundwater, a flood or landslide event could pose a future threat. The Jordan Valley Water Conservancy District also owns water rights in the area and plans to install wells, which could pull groundwater from the site and contaminants towards the Jordan River as well.

Midvale City also has concerns regarding long-term, restrictions placed upon the City by EPA and UDEQ in regard to institutional controls. Concerns include the City's ability to monitor developers in the area over time and once residential areas are built, working with Homeowner Associations. How much oversight authority and resources will the city require and what are the realistic expectations for Midvale to assure the contamination never becomes a problem in the future which is in their view a daunting responsibility. A property owner and development company recently purchased the Sharon Steel property in January 2004 and are planning to build a mix of residences (2,500 homes) and commercial businesses on the site.

City officials are pleased with the current working relationships between all of the agencies involved in addressing the Site. Early on, relationships were adversarial at times, but have improved greatly over the past few years. They are cautiously optimistic that work on the remedy (actually "moving dirt") will begin soon. They urge that the regulatory agencies continue the spirit of cooperation so that there are no changes to clean up standards in the future which would further delay implementation of their redevelopment goals.

Contact: ***Date of Interview May 17, 2004***

***Michelle Baguley
Grant Administrator
Citizens for a Safe Future for Midvale***

**SHARON STEEL
FIVE-YEAR REVIEW QUESTIONS**

1) What do you know about the Sharon Steel clean up? Michelle has worked as Secretary for the Technical Assistance Group (TAG) organization, Citizens for a Safe Future for Midvale (CFSFM), for the last 4-5 years. The CFSFM meets every first Wednesday of every month to discuss issues related to both the Sharon Steel and Midvale Slag Superfund sites.

Do you have any *personal* concerns regarding the clean up? Are you aware of any *community* concerns?

2) Baguley does not have any concerns and feels the cleanup remedy is protective of the Midvale community's health and environment. If there are any issues with the cleanup over the last five years, Baguley wanted the remedy to be protective and not inhibit development. Baguley said in the past, EPA bureaucracy with policy and legal considerations have also caused delays and threatened development opportunities for the Sharon Steel site. Baguley said EPA could provide more consistent communication with the community and eliminate some confusion to help justify any delays. Baguley does feel the regulating agencies are working better today with the community.

3) Have you noticed anything going on in the area that you believe might have damaged or compromised the remedy? Baguley knows the area is fenced and is not aware of any construction projects on site which may have jeopardized the integrity of the cap.

4) Do you have any additional comments, suggestions or questions regarding the clean up?

Baguley said she would like communication from the regulatory agencies to be better and answers need to be provided quicker to the community. Baguley said the Utah Department of Environmental Quality attends every TAG meeting and would like to see EPA represented, at least yearly, regarding Sharon Steel and for the Deletion process or Five-Year Review.

Interviewed By: Dave Allison

Contact:

May 20, 2004

Lee King
Midvale City Administrator
Midvale City Corporation
655 W. Centrr St.
Midvale, Utah 84047

SHARON STEEL
FIVE-YEAR REVIEW QUESTIONS

1) What do you know about the Sharon Steel clean up? King has worked as the City Administrator for Midvale City for the last 7 years and his city responsibilities involved more post-remedy issues with Sharon Steel. The membrane capping remedy used to be an issue with the City with limited development options. However, over the last five years, King said the EPA and Superfund program works differently today with an emphasis on future redevelopment opportunities as experienced at the neighboring Superfund site Midvale Slag. Mayor Joann Seghini was not available for this interview.

2) Do you have any personal concerns regarding the clean up? Are you aware of any community concerns? King said the primary concerns are future land use and the economic unknowns associated with the development of a former Superfund site. 1) If a developer can build on the site considering a difficult and potentially expensive remedy cap, and 2) how well a developer can market the area to construct businesses and homes built upon contaminated soils. Of note: a developer is currently looking into the site for a mixed commercial and resident project and has submitted a Master Plan to Midvale City planners for approval.

King said of concern is long-term restrictions placed upon the City by EPA and UDEQ in regard to institutional controls. Concerns include the City's ability to monitor developers in the area over time and, once residential areas are built, working with homeowner associations. How much oversight authority and resources the city will require and what the realistic expectations for Midvale assuring the contamination never becomes a problem in the future is a daunting responsibility.

As for the community, Midvale does not receive any calls regarding health conditions and no specific site inquiries other than general development questions for the area. King said the residential properties remediated have for the most been kept nicely and have improved the community appearance.

3) Have you noticed anything going on in the area that you believe might have damaged or compromised the remedy? King is not aware of any activity which would compromise the remediation cap. King does not have any concerns about the integrity of the cap and the Operations and Monitoring of the site are functioning as expected. Any pre-construction, public utility or water and sewer work on the site requires Midvale City approval and oversight. All Midvale City workers are 40-Hour Certified to handle hazardous materials.

4) Do you have any additional comments, suggestions or questions regarding the clean up? One point of contention for King and the Superfund process taking so long is consistent interpretations of agreements made by different levels of EPA branches or management. King has experienced frustration with the neighboring Midvale Slag Superfund Site where EPA enforcement and EPA headquarters have reassessed prior agreements with EPA Region 8 and Midvale City regarding site management, financial and liability matters. Different decisions among different branches making significant changes complicate and restrict site redevelopment options. King feels there is a perpetual quality to the process, which may never end with the completion of Midvale's two Superfund sites.

Contact:

Date of Interview June 11, 2004

***David May, President
571 East St. Mary's Drive
Midvale, UT 84047***

***SHARON STEEL
FIVE-YEAR REVIEW QUESTIONS***

1) What do you know about the Sharon Steel clean up? Dave May is well informed on the immediate status of the Sharon Steel Superfund site and has been the President of the Technical Assistance Grant group, Citizens For a Safe Future for Midvale (CFSFM), for the last four years. May said CFSFM has existed since 1992 and conducts monthly meetings on the Sharon Steel and Midvale Slag Superfund sites.

2) Do you have any personal concerns regarding the clean up? Are you aware of any community concerns?

May said he has heard of no community health or environmental concerns with the Sharon Steel remedy and that nothing has changed with the site for about 6-9 months. May said the recent developer and property owner, Creterra/Jordan Bluffs, is looking at the site for a mix of residential/commercial buildings and presented a master plan to the TAG in June. May feels as long as the developer follows the construction procedures for the site the TAG does not see any conflicts or reason for concern at this time.

3) Have you noticed anything going on in the area that you believe might have damaged or compromised the remedy? May said the cap is working and remains protective and knows of only the developer/owner planning any construction activities at the site.

Do you have any additional comments, suggestions or questions regarding the clean up?
May has no issues with the Sharon Steel site at this time.

Interviewed By: Dave Allison

Contact: ***Date of Interview May 17, 2004***

***Scott Miller, Vice President of AREVA
MRRC (Mining Remediation Recovery Corp.)
340 Hard Scrabble Road
Helper, UT***

***SHARON STEEL
FIVE-YEAR REVIEW QUESTIONS***

1) What do you know about the Sharon Steel clean up? A former property owner of the site as of January 2004, Miller said in hindsight the remedy was not the best design because it had limited development options.

2) Do you have any personal concerns regarding the clean up? Are you aware of any community concerns? The former property owner of non-residential properties, Miller has since sold the Sharon Steel property but MRRC does have 11 acres on the Midvale Slag site and remains interested in the area. Miller does not have any concerns but the stigma associated with a contaminated Superfund site property was terrible. Miller said this was a very tough sale with the property value diminished considerably because of its status as a Superfund site. Some legal matters with EPA were a concern as well regarding the "Windfall Lien" legalities, which also nearly derailed the sale of the property.

3) Have you noticed anything going on in the area that you believe might have damaged or compromised the remedy? Miller knows the area is fenced and is not aware of any construction projects. Miller did not have any issues with the protectiveness of the cap and feels it is functioning as designed.

4) Do you have any additional comments, suggestions or questions regarding the clean up?

No additional comments.

Interviewed By: Dave Allison

Contact: ***Date of Interview May 27, 2004***

**Rick Scott
U.S. Bureau of Reclamation
801/379-1000
Provo, UT**

***SHARON STEEL
FIVE-YEAR REVIEW QUESTIONS***

1) What do you know about the Sharon Steel clean up?

Rick Scott is a project manager with the U.S. Bureau of Reclamation and handles the O&M tasks for UDEQ. The USBR has been involved at the site since the start of the remediation cleanup when they won the role of oversight contractor. Scott has been involved with both the residential and non-residential portions of the cleanup from the beginning and has seen every aspect of the cleanup.

**2) Do you have any *personal* concerns regarding the clean up?
Are you aware of any *community* concerns?**

Scott said the primary work on the site now is weed control. Weed control is a spring and summer activity requiring a canvassing approach to the site. Scott said his team would have the visibility to notice any erosion areas of the site with the amount of area required to maintain the site. Scott has not seen anything.

3) Have you noticed anything going on in the area that you believe might have damaged or compromised the remedy?

4) Scott said he not seen anything which may have compromised the integrity of the site and said the fencing does a good job keeping people out.

Do you have any additional comments, suggestions or questions regarding the clean up?

No additional comments.

Interviewed By: Dave Allison

Contact:

Date of Interview June 3, 2004

***Dennis Spackman
Midvale TAG Member
8332 Jackson St
Midvale, UT 84047***

***SHARON STEEL
FIVE-YEAR REVIEW QUESTIONS***

1) What do you know about the Sharon Steel clean up? Spackman has lived in the area and has been involved with the Sharon Steel site since 1990.

2) Do you have any personal concerns regarding the clean up? Are you aware of any community concerns? Spackman said the protective cap issues are in the past but has a concern with groundwater running under the capped material and leaching tailings into the Jordan River. The Sharon Steel and Midvale Superfund sites sit above the river and Spackman is concerned a wet spring or above normal precipitation event could flow material into the river. Spackman would like to see more testing done on the site for saturation.

The only other concern is the site comprises a very large land area and is vital to the Midvale City's economic redevelopment future. Spackman is aware of prospective developer interest but he questions how successful this can be done with a complex cap remedy. Spackman said even with new technology, building footings placed only 8-10-feet above the cap would be difficult unless a substantial amount of soil is placed above the cap.

Spackman said the surrounding community is comfortable with the cleanup, knows the site is regularly monitored, and the residents underwent an extensive blood lead study years ago. Spackman said the community was unhappy with the cleanup inconveniences at first, but the cleanup is perceived as more of a benefit today. Spackman said the (Salt Lake) County devalued the properties during the cleanup, which added to the contamination stigma years ago, but is regarded as a higher improvement today.

3) Have you noticed anything going on in the area that you believe might have damaged or compromised the remedy? Spackman said the fencing does a good job keeping people out of the site.

4) Do you have any additional comments, suggestions or questions regarding the clean up? Spackman mentioned, as a community representative, he would like quicker answers from EPA on why delays happen or the agency was unable to perform at times.

Interviewed By: Dave Allison

Contact:

Date of Interview May 25, 2004

**Verdon Walker
7886 Olympus St
Midvale, UT 84047**

***SHARON STEEL
FIVE-YEAR REVIEW QUESTIONS***

1) What do you know about the Sharon Steel clean up? Walker has lived in the Midvale area for 35 years and is a past President of the Technical Assistance Grant organization Citizens for a Safe Midvale. Walker has witnessed the cleanup from the beginning and felt the only real issues with the Sharon Steel site are in the past. The frustration with the remedy to cap the contamination rather than haul it away was the main issue. Walker said efforts from the city and regulatory agencies are working better to put the area back into productive use again.

2) Do you have any *personal* concerns regarding the clean up? Are you aware of any *community* concerns?

Of the 600 residential properties which were remediated through 1998, Walker said initially the community felt the cleanup was unnecessary. Walker said people felt the health hazards associated with the site were "overblown" and the construction expense unnecessary. Overall, the cleanup was a real improvement for the community and the neighborhood appearance improved greatly.

Of more concern for Walker today is the non-residential portion of the site (OU1). The ability of Midvale City to develop the site and preserve the nearby wetland and Jordan River recreational areas is where Walker spends most of his attention today. Walker knows the site will be opened up for development and wants the wetlands and river maintained with any future development projects.

3) Have you noticed anything going on in the area that you believe might have damaged or compromised the remedy? Walker knows the area is fenced and believes the site is protective of health and the environment. Walker said he has seen bicycles on some of the slopes outside the capped areas and doubts the steep 45-degree slopes would be possible for four-wheelers to do any real damage.

Do you have any additional comments, suggestions or questions regarding the clean up? Walker said the relationship with EPA and the Technical Assistance Group were adversarial at times but that is not the case today. Walker cites a major improvement is the good involvement during the slow process with the TAG, by EPA and the State. Walker cites the consistency with the same project managers helps to build good relationships.

Interviewed By: Dave Allison

Contact:

Date of Interview, June 17, 2004

**Ben Magelsen
President of Createrra
Jordan Bluffs, Inc.
7800 South to 8500 South and
700 West to Jordan River**

***SHARON STEEL
FIVE-YEAR REVIEW QUESTIONS***

1) What do you know about the Sharon Steel clean up? Magelson said his company is always looking for development opportunities and knew prior to purchasing 265 acres of the Sharon Steel property in January 2004 that developing a Superfund Site would be a good challenge. Magelson said at this point they are comfortable building here despite the history of the site and are not discouraged with a complex remedy design involving an impermeable cap. Magelson's development company plans to build a mix of residential (2,500 homes) and business buildings on the site. Preliminary geo-technical construction work began this spring 2004.

2) Do you have any *personal* concerns regarding the clean up? Are you aware of any *community* concerns? As far as the site the being protective of human health and the environment, Magelson has no personal concerns regarding the Sharon Steel site. Magelson mentioned good cooperation from the regulatory agencies (UDEQ and EPA) and understands the contamination will have continuous oversight for the duration of the development. Magelson is planning to place additional soil on top of the existing cap to provide a buffer zone from the capped contamination and also accommodate construction needs. Magelson said no environmental concerns have been expressed by the community to him or from neighboring interest groups regarding the development.

If there are any issues with developing the site, Magelson would like a further definition of the Superfund guidelines or standards as the site transitions from an abandoned Superfund site into a development. Magelson would like the reassurance of completely defined agreements with the regulatory agencies which would enhance the ability to redevelop the site properly and avoid any potential problem delays or jeopardize the project. Magelson said both agencies (EPA and UDEQ) have been good to work with.

3) Have you noticed anything going on in the area that you believe might have damaged or compromised the remedy? Magelson said everything is being done to keep the remedy intact and knows of no activities which could compromise the development.

Do you have any additional comments, suggestions or questions regarding the clean up?
No

Interviewed By: Dave Allison